Doctor in Education (EdD)

Thesis

The dynamics of learning of physiotherapy students from non-traditional backgrounds

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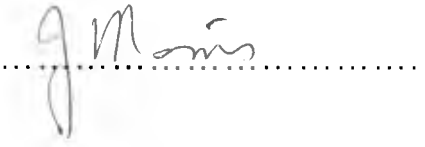
Declaration

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

Signed  .....

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Abstract

This longitudinal, qualitative study explored the learning experiences of physiotherapy students from non-traditional backgrounds undertaking an innovative part-time programme. Non-traditional characteristics included maturity, prior and ongoing employment as physiotherapy assistants and weaker academic backgrounds.

The phenomenographic methodology followed is an approach associated with research into student learning. Seventeen students in the 2000 cohort participated in five semi-structured interviews undertaken at intervals across the four-year programme. Topic areas which research has identified as influencing students' learning and learning outcomes were explored at each stage of the study relative to experiences in the preceding time period. These included motivational factors, curriculum design and delivery, learning and assessment experiences in academic and clinical settings, and perceptions of the concepts of learning, understanding and memorisation.

Verbatim transcriptions of interview tape recordings were coded manually and an iterative process followed to identify discreet categories of description which, together, captured the full range of responses on the topics addressed at each set of interviews. To identify temporal changes, the number of responses associated with each category, and for each student, was recorded.

A rich picture of the experiences, attitudes and behaviours of participants was found. The findings identified that they strove for achievement of the high quality learning outcomes necessary for effective clinical practice and lifelong learning. Students' life experiences and high levels of motivation were important learning resources. Although some aspects of the programme were challenging, the participants' weaker academic backgrounds did not prevent them from successfully meeting the requirements of higher education. Feedback on the design and delivery of the programme was also positive. Temporal stability around conceptual perceptions was found.

Further research into the learning experiences and behaviours of physiotherapy students from both traditional and non-traditional backgrounds is needed, as is more longitudinal research into student learning in general.

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Jane Sweeting and Cas Binmore for transcribing the tape recordings

Dedication

To my father, Oliver Morris

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Statement

Introduction

As a physiotherapy educator, I could have followed a research direction either in clinical physiotherapy or physiotherapy education. While undertaking a teaching qualification in the early 1990s I realised that the latter was the direction I wanted to follow. I have explored several education topics, either formally or informally, during the past fifteen years, but they have all informed the overall focus of my interest, which is student learning, particularly in physiotherapy education. The professional philosophy and design of the EdD has enabled me to both maintain this focus and explore several of the numerous factors which influence student learning and to develop in my roles as teacher and academic.

Links among programme elements

I knew what I wanted to investigate for the thesis before I registered for the degree and a number of the taught courses enabled me to follow this line of enquiry. I learned much from these experiences and they directly informed the work I have done for the thesis. The two 'Methods of enquiry' (MOE) courses were particularly useful in this regard. The longitudinal study I undertook for the thesis meant that I started collecting data at the start of the programme. I learned much in the

taught sessions about other research approaches which helped me to clarify and contextualise the methodology and method I was using.

The two MOE assignments also enabled me to explore the research methodology I was following and to undertake preliminary analysis of some of the data already collected. Both these opportunities proved to be invaluable in informing my work on the thesis. The first assignment on the research methodology highlighted a number of areas, particularly around validity and reliability, which I needed to take into consideration when managing and analysing the data. In the second assignment, the experience of analysing a small set of data identified issues around the process which I had used which led me to modify some aspects of the procedure I followed when analysing the full set of data.

The content covered in the other two taught courses aligned particularly well with issues currently relevant in physiotherapy education and student learning on physiotherapy programmes, and I was able to explore these in the assignments. Although not apparently directly relevant to the thesis, they addressed issues which usefully informed my understanding of thinking behind the design and delivery aspects of the programme I was investigating for the thesis.

Physiotherapy education moved into higher education in the 1990s and, in the early 2000s, educators were experiencing challenges associated with their dual roles and responsibilities in both physiotherapy and higher education and associated rapid policy developments in both areas. The theoretical background covered by the presenters and the resulting discussion generated among the students in the 'Foundations of professionalism in education' course assisted me in developing an understanding of how physiotherapy educators could meet the demands of their two masters in a way which would not compromise student learning. In the assignment, I considered what the expectations of being a professional are and the various demands being placed on physiotherapy educators. I argued that the demands within higher education and physiotherapy were not different and that educators could successfully meet both concurrently, within the context of being professionals. I was pleased when the article I submitted to the national physiotherapy journal on this topic was published and I hope that it was able to make a positive contribution to enabling physiotherapy educators to manage these challenges.

I selected the specialist course 'Curriculum, pedagogy and assessment' not only from personal interest, but because it also enabled me explore issues around programme design which were current in health education at the time, including the programme on which I was teaching

and researching. Physiotherapy education has been moving away from use of traditional didactic approaches. However, there has been ongoing debate about which alternative approaches are optimal in enabling students to meet the requirements for high quality professional practice and continuing professional development. In this course, I was able to revisit the literature on problem-based learning (PBL), an approach which I had first studied about ten years earlier while undertaking the teaching qualification. I was aware that experience of implementation of PBL had informed a more recent reflective and evaluative literature than the earlier, more theoretical and propositional publications, and I reviewed the evidence in order to assist with decision making as to whether this is an approach which should be adopted in physiotherapy education. Despite having a uni-professional focus, similar debates were taking place in other health professions and I successfully submitted an article for publication in a medical education journal.

I learned much personally from exploring the literature on PBL and evaluating the strength of evidence for its use. At the time I first read the literature, I became a strong believer in it as an educational approach in health education. However, with the benefit of a greater understanding of educational theory and research, I now hold a more balanced view of the strengths and weaknesses of this approach. This

learning experience also involved my comparing and considering the strengths and weaknesses of the design of the programme on which I was teaching, reflection which proved very useful when reviewing it and designing an amended programme for re-validation a few years ago.

Although I knew what I wanted to investigate for the thesis, the situation was different for the Institution focussed study (IFS). Fortuitously, the need for a large-scale study arose, during existing quality monitoring procedures, which would enable me to meet both this need and the requirements for the IFS. It was an audit of use of a newly developed clinical assessment form which was being used by a number of universities in the region. Unlike the qualitative research I was undertaking for the thesis, this study utilised a quantitative design which included an experimental study and a survey, with use of inferential and descriptive statistics, respectively. Although I have undertaken quantitative studies in the past, the methods and data analysis procedures were ones with which I had no direct experience and I learned much from the investigation. I am pleased that the results of the audit have also proved to be of value to physiotherapy educators in institutions other than mine and that its findings continue to be used to inform review and ongoing refinement of the assessment tool.

As I have outlined in the thesis report, the findings are a contribution to both professional and academic knowledge and application. The outcomes of the study have already informed the design and delivery of the part-time programme itself. In addition, I have also argued that, despite its focus on a small group of students with unusual characteristics, the findings are also relevant more broadly to physiotherapy, other health professions and other disciplines in higher education.

I also learned much personally from undertaking the research for the thesis. At the time of starting the data collection, I was already familiar with a large volume of the research relevant to the areas I was investigating and the methodological approach I was using. This existing knowledge proved to be very useful. However, the practical experience of actually undertaking data collection and analysis gave me a much greater insight into the research presented in the literature. I learned more initially from undertaking the MOE assignments. However, the main learning was associated with the thesis itself. I am now better able to appreciate methodological issues which could have influenced the quality of studies. I also have greater insight into the challenges associated with managing and interpreting qualitative data. This learning meant that when I re-read and evaluated the literature

when writing the thesis report, my insights and understanding were fuller.

Other learning from the EdD

Although I could have undertaken the research I did for the thesis as a PhD, I believe that the professional focus of the EdD and the variety of learning experiences has enhanced both my personal and professional development. In addition to being able to undertake two pieces of useful research, I learned much about the range of topics covered in the taught parts of the programme, from both the various presenters and the contributions made by others in the student group.

One notable area was that of qualitative research. I was familiar with the methodology associated with the study I was doing for the thesis, but had no background knowledge or understanding of the nature of qualitative research in general or the range of different methodologies which form this branch of research. The learning I gained greatly assisted my understanding of the research methodology I was using for the thesis. However, my background in positivist quantitative research meant that, although I recognised the possibilities for qualitative research in health as well as in education, it took time to become embedded in my thinking. I think the acceptance was facilitated by my experience of undertaking qualitative research for the thesis and the

realisation of how much valuable information can be found in its rich data. This experience has led me to actively support use of qualitative research in physiotherapy in addition to established quantitative approaches. I hope that I can build on the increasing recognition of the place of qualitative research in widening the evidence base for physiotherapy by exploring patients and others experiences and perceptions. The means by which I can most usefully achieve this is in students' research projects. A wider view of physiotherapy research will help address current difficulties in identifying large numbers of projects and students' experiences will potentially inform research in clinical settings.

Broader personal and professional development

In the process of undertaking the EdD, not only has my knowledge and understanding across a broad range of educational areas increased, but I am aware that my cognitive, metacognitive and reflective skills have developed too. I experienced personal and professional development as a result of undertaking a master's degree, but, on reflection, that growth tended to have rather a narrow focus. In contrast, undertaking the EdD has enabled me to take a broader and deeper view. This has proved to be important, because I now work at a university which offers joint occupational therapy, podiatry and physiotherapy degrees. I am also now involved in a number of post-graduate programmes. I believe I

would have found it more difficult to expand my thinking and understand this larger portfolio of programmes and their influences on student learning if I had not undertaken the doctorate.

The personal growth I have experienced from undertaking the EdD is also having positive effects, at a wider professional level. I felt more able and confident to participate actively in a number of professional activities in physiotherapy education as a consequence of undertaking the doctorate and have undertaken a range of these in recent years. These have included becoming an external examiner and being a member of a number of professional and regulatory body committees with educational remits, including programme approval.

I have also become aware that the development described earlier around understanding the literature is more wide-ranging than the literature I used in the thesis report. In my new place of employment, educational research is enjoying increased popularity, which has resulted in the formation of an interest group and regular discussion among a number of interested members of staff. I have discovered that, even when the topic under discussion is not one about which I know much, I am still able to make a useful contribution in terms of the questions I ask and points I raise. I think that, in the past, I would have been more of an observer, using the opportunity to learn, rather than

being able to contribute to the debate. I have also noticed this development when attending physiotherapy and education conferences. Even when presentations have not been on subjects with which I am familiar, I feel that I have gained more from them than I would have done in the past.

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Chapter 1

Rationale for the study

Research has identified a number of intrinsic and extrinsic factors which influence how and what students in higher education learn, and how these factors interact in different ways, depending on the characteristics of the students and the nature of their learning experiences. It is, thus, important to investigate students' educational experiences in order to be able to facilitate optimisation of the quality of learning they experience.

Although much research has been undertaken into student learning in recent decades, the research base is weak or limited in some areas. One of these is learning at a disciplinary level, although an increasing amount of the research into student learning in recent years has focussed on the processes and experiences within particular disciplines. However, little has been undertaken within the field of physiotherapy. A few studies have considered individual aspects of student learning in physiotherapy (Tang, 1998; Kell and van Deursen, 2000), but, at present, there is no published research which has taken a wider view of learning in physiotherapy students. Until such data is obtained, issues regarding the fitness-for-practice of physiotherapy graduates cannot be usefully addressed.

The majority of physiotherapy students in the United Kingdom (UK) are school leavers, while a smaller number have so-called 'non-traditional' or 'non-

standard' backgrounds. Research relating to both groups is needed. The part-time physiotherapy programme under consideration was specifically designed for students from non-traditional backgrounds. The unusual backgrounds of students on the programme, compared with other physiotherapy programmes, and the particular aspects of its design justified investigation into these students' learning experiences. As both an educator on the programme and someone with a strong interest in the whole area of student learning, I was in a fortunate position to be able to undertake this investigation.

Background to the programme

A successful part-time undergraduate occupational therapy (OT) programme, primarily for unqualified, but experienced OT assistants, has been delivered at Colchester Institute for several years. When the then National Health Service (NHS) regional education funding body sought to address issues of difficulties with recruitment and retention of physiotherapists in Essex, it was decided to develop and deliver a part-time undergraduate physiotherapy programme, following the successful OT model.

At the time of its inception in 1998, the programme was unique within physiotherapy undergraduate education in the UK, and possibly elsewhere. The established physiotherapy education system involved programmes being offered on a full-time basis over three years, with the vast majority of students being school leavers with three A levels at grades B/C or above. In contrast, the purpose of the Colchester programme was to enable those likely to have a

long term commitment to the area to undertake physiotherapy education. As had been the case with the OT programme, this was likely to involve older applicants with homes and employment in the area. In order to recruit such people, a number of entry and curricular factors were utilised which differed from other physiotherapy programmes:

- broadening the academic entry requirements
- encouraging those of mature (21 years and older) age to apply
- recruiting applicants who lived and/or worked nearby geographically.

Preference was also to be given to accepting applicants who were currently employed within the NHS, usually as physiotherapy or rehabilitation assistants. In recognition of the likelihood that such applicants would have existing personal and financial commitments which would exclude them from undertaking full-time education, the part-time format was adopted. Students attended college for two days a week and worked in their usual roles for the remainder of the time.

In higher education in general, 'traditional' students are school-leavers who enter university with two or three A levels (Webb, 1997). In undergraduate physiotherapy education, entry to programmes often demands A levels with grades above the minimum performance generally required by universities. This means that the term 'non-traditional' within physiotherapy education includes those with A level grades which may be considered 'standard' in other disciplines.

Similarly, the term 'non-traditional', which usually refers to mature entrants who enter higher education via routes other than that of having A levels (Webb, 1997) is narrower within physiotherapy education. Very high levels of achievement are required from those who have undertaken Access or other similar courses and entry for graduates commonly demands achievement of at least a second class (upper division) (2.1) degree.

Against this background, the term 'non-traditional'' in relation to the part-time programme differs in a number of ways from other physiotherapy programmes:

- students can be of any age above 18 years (no upper limit is set, but there is an assumption that students will still be able to undertake employment for a reasonable amount of time before reaching retirement age)
- students with weaker than usual entering academic achievement are accepted
- life and employment experience, particularly in the health sector, are considered as part of the applicant's entry 'package', with relevant experience being able to compensate for a weak academic background.

Widening access to higher education has been part of government policy in the UK for a number of decades, although the widening participation agenda which has been in place for the last decade or so has been argued to have had the greatest effects on higher education (Davies et al., 1997). Debate as

to whether the current widening participation agenda is informed more by the requirements of the knowledge and technological economy than by the merits of social justice (Davies et al., 1997) is not the only contested issue associated with the policy, Although not intended by those who started using this terminology in policy documentation regarding widening participation and broadening access to higher education (Webb, 1997), it is argued that perceptions arising from the use and interpretation of the terms 'non-traditional' and 'non-standard' are problematic, in a number of ways. Webb (1997) argues that 'traditional' is often regarded as 'normal', while the term 'non-traditional' is interpreted, not as 'different', but 'abnormal'. Burke (2002) agrees that 'non-traditional' students in post-compulsory education tend to be perceived from a deficit point of view. This deficit model encompasses a number of variables, including the nature of entry qualifications, age and social class.

Webb (1997) questions the apparently inherent assumption that all 'non-traditional' students are 21 years or older, based on a definition of 'traditional' students as being 18 year old school leavers. She argues that this position disadvantages those under the age of 21 who have not followed the 'standard' A level route. In addition, Webb (1997) asserts that the label of 'second chancers' which have been applied to mature aged students reinforces the deficit model.

The expectation that the usual route into higher education is that of A levels has further been argued to reinforce the deficit model in relation to social

class. Leathwood and Hutchings (2003) state that the nature of academic entry qualifications tends to reflect social class, with most students who enter via the standard A level route coming from middle-class backgrounds, They argue that this means that negative attitudes towards those who enter higher education via other academic entry routes also, by definition, exist towards students from lower social classes.

In addition to the negative attitudes and expectations associated with students from 'non-traditional' backgrounds, it has been proposed that using a single term to capture all students who are not entering higher education at 18 years of age through the usual A level route, suggests that they are a homogeneous group. A number of authors have stated that use of umbrella terms like 'non-traditional' ignores the wide range of differences among those who are grouped together in this way. Webb (1997) and Parr (2000) argue that students from 'non-traditional' backgrounds are individual and heterogeneous in many ways, including, age, academic backgrounds, social class, gender, ethnicity and culture, and types and levels of ability and disability, and that the importance of individual identity and history is lost when they are grouped together under one label, In addition to policy makers and institutions, this criticism is also applied to researchers who study such students and do not take account of the range of variables which inform their experiences of higher education. Webb (1997) and Archer (2003) argue that research should not focus exclusively on one variable eg. social class, but take other factors like gender and age into account. Research findings, that the gender and ethnicity of participants from within the same social class informed their

attitudes towards higher education (Leathwood and Archer, 2003), support this argument. Parr (2000) also argues that it is important that researchers do not let group data and commonality of findings mask the fact that each participant has an individual identity and that responses to questions have a personal meaning.

Research into the experiences of higher education of students from non-traditional backgrounds has identified limited recognition of the differences which they do have in comparison with traditional school leavers. These include:

- lack of linkage of theory with relevant life experiences which they have
- being a minority numerically
- university life and culture being geared to younger students
- lack of the sort of practical support needed by older students
- negative attitudes and behaviours of university staff
- timetabling which does not recognise external commitments

(Bamber et al., 1997; Bamber and Tett, 1999; Burke, 2002; Bowl, 2003).

Use of the word 'non-traditional' in this study needs to be considered in light of the important issues raised above. Development of the part-time physiotherapy programme was not a response to an externally imposed widening participation agenda nor undertaken in addition to existing traditional provision. In this instance, the 'non-traditional characteristics of the students were desirable in light of the overall purpose underlying the establishment of

the programme, and were viewed positively by the funding body, the institution and the staff. The content and characteristics of the curriculum had to reflect the national curriculum requirements for physiotherapy education in the UK. However, timetabling, delivery and the nature of the student learning experiences are decided locally, and these aspects were overtly informed by the characteristics of the students. The programme was aimed exclusively at students with backgrounds which differed from the norm, so avoiding many of the issues which students from non-traditional backgrounds entering higher education have found:

- the part-time design was specifically used to enable students to continue in employment
- full use was made of time in college and unscheduled timetabling was avoided or detailed in advance, to enable students to manage their time optimally
- the absence of students from traditional backgrounds on the programme obviated issues which have been associated with traditional and non-traditional students studying together, including those regarding 'university culture'
- support systems actively recognised the needs of the students, and their life and employment experiences were overtly incorporated into the teaching and learning processes.

As the focus of the study was students on this particular programme only and none had the usual 'traditional' characteristics, use of the term 'non-traditional' in the title can be questioned. The reason for including it reflects the fact that

these students were 'non-traditional' within the broader context of physiotherapy education in the UK at the time. Although there would have been mature students on other physiotherapy programmes, and some of these might have had employment experience in the NHS, this was the only programme, at the time, whose design enabled ongoing employment in healthcare settings. In addition, the fact that few of the students on the Colchester course would have met the entry requirements for other programmes was also a non-traditional factor.

Even if the nature of the programme avoided a number of the negative consequences of being 'non-traditional', some of the issues raised in the literature do apply. These refer to the importance of recognising the individuality of participants in research studies. Research, both quantitative or qualitative, often involves grouping findings, a characteristic which 'loses' the individual. This is true of this study and the implications need to be taken into account.

Educational philosophy of the programme

There is a professional requirement and expectation that the education experienced by physiotherapy students will lead to the achievement of high quality learning outcomes which will equip them with the knowledge, skills and attitudes to be flexible, adaptable clinicians who exhibit an ethos of continuing professional development and lifelong learning once they have qualified (Chartered Society of Physiotherapy, 2001).

In order to facilitate these outcomes the programme design forms a coherent model of learning based on established educational research evidence which has identified learning experiences which optimise the quality of the student learning experience. Within this framework, students' inherent strengths are exploited and their weaknesses addressed. The learning experiences offered to students aim to facilitate the achievement of high quality learning outcomes and enable them to continue their professional development after qualification. This involves an interactive student-centred approach in which staff act as facilitators of learning and students are encouraged to become self-directed learners. Strategies include the learning of relevant, integrated material, active participation of students in the learning process, and overt recognition and use of students' life experience to inform and make their learning relevant (Ramsden, 1992; Trigwell and Prosser, 1999; Wilss et al., 1999). The development of independent and self-directed learning skills is also facilitated through the limited use of formal teaching of theory and extensive use of directed self-study using questions provided in advance of small group tutorials. New practical skills are demonstrated by staff, but students are asked to provide suggestions and ideas on how these skills can be modified for use in other contexts. Staff support and supervision is available at all times during timetabled sessions (which are more numerous in the earlier years of the programme) and students know that staff are contactable during independent learning activities, if necessary. Module content is designed in such a way that new learning builds on that already acquired, which serves both to consolidate knowledge and understanding and to enable students to apply and utilise their learning.

Assessment on the programme follows the principle of 'constructive alignment' (Biggs, 2003) in that assessment formats reflect the nature of the learning undertaken eg. practical skills are tested practically, not theoretically and the style and wording of questions matches the way in which material has been covered in class. ie. the same style of wording is used in written examinations as is used in the questions considered during theory tutorials. In addition, a range of assessment formats is used in order to enable all students to both play to their strengths and also experience activities which will develop skills useful to clinical practice, including group work. These include unseen examinations, practical examinations, reflective and formal academic essays, seminar and poster presentations, and open-book examinations. Performance on clinical placement assesses a range of elements of clinical practice – interpersonal skills, professionalism, clinical reasoning and treatment/management skills.

Mock theory and practical examinations are offered before each college-based assessment. Practical stations are marked and sheets returned to students as feedback. While the theoretical mock answers are not marked by staff, students are welcome to seek feedback, if they so wish. Experience with the first few cohorts of students demonstrated that those who did not do the mock examinations were disadvantaged at the real ones. Attendance at these for all Level 1 and some Level 2 assessment is now compulsory. Attendance at others continues to be optional, but the opportunity is used by a number of students.

Contribution of the study

A number of positive consequences of investigation into this programme can be anticipated for the Colchester programme, and physiotherapy education and higher education in general.

Investigation into students' learning experiences will provide invaluable feedback on how well the design and delivery of the programme is meeting professional educational needs. Implementation of a curriculum which is designed to optimise the quality of the student learning experience should assist the profession in meeting the requirements for effectively undertaking continuing professional development with associated optimisation of the quality of care provided. The study will assist in identifying how well the programme is helping to achieve these objectives, with potential implications for future educational practice in the department.

Although being undertaken with students with some characteristics not commonly found in other physiotherapy schools, I anticipate that the outcomes of this research will also be able to make a valuable contribution to physiotherapy education in general. The dearth of information regarding student learning in physiotherapy makes dissemination of the research results important.

The findings should also be of value to the wider health education community and higher education in general, particularly from the perspective of widening participation.

The specific research questions are:

1. What motivational factors influence the students at the start of the programme and how are these influenced by undertaking the programme?
2. What effect does undertaking the programme have on students' conceptions of the nature of learning, understanding and memorisation?
3. What influences do students' life experiences have on their learning and how does this learning inform their life and employment experiences?
4. What are the students' attitudes towards and learning from their study and assessment experiences as they progress through the programme?

The literature on student learning is presented and reviewed in the next chapter, followed by two chapters which respectively address the chosen methodological approach and describe the study method. The four subsequent chapters present and discuss the findings relating to the different areas investigated in the study. In the final chapter, the key findings of the study are summarised and the contribution of the study considered. In

addition, methodological issues are considered and suggestions made regarding further research.

Chapter 2

Literature review

Student learning

Research has established that the quality of students' learning outcomes is influenced by the ways they approach their leaning (Entwistle and Ramsden, 1983; Biggs, 1993) which is, in turn, affected by the conceptions which students hold of the nature of learning (Prosser and Trigwell, 1999). Students' conceptions of learning are themselves shaped by several factors, including their prior experiences of learning (Prosser and Trigwell, 1999), the context of the current learning situation, including the nature and quality of teaching and assessment (Entwistle, 1997; Morgan and Beaty, 1997; Biggs 2003), their perceptions of the learning context (Prosser and Trigwell, 1997), and their life experiences, motivations for studying and individual personalities and learning styles (Wilss et al., 1999).

Research into the multi-faceted elements relevant to student learning has used both quantitative and qualitative methods. Quantitative data have been derived from specifically designed instruments with useful and relevant results eg. Meyer and Shanahan (2000). Qualitative research has often involved the adoption of a phenomenographic approach. This approach seeks to identify and explore the different ways in which phenomena are experienced by people (Marton and Booth, 1997), for example, groups of students'

experiences of different aspects of higher education. A large body of literature, reflecting research undertaken in different cultures, countries and disciplines, with a wide range of students, has developed over the past three decades or so. Although much has been learned about student learning, its complex nature and the questions which existing research has also raised, justifies continued research.

Approaches to learning

Initially, the terms 'approaches to learning' and 'approaches to studying', were used interchangeably (Entwistle, 1988), but the former is currently more popular (Ramsden, 2003). The concept of approaches to learning and the existence of different types of approaches have been identified and refined by several researchers (Entwistle and Ramsden, 1983; Biggs, 1993; Marton and Saljo, 1997). However, the landmark research was undertaken by Marton and Saljo (1976a). From a series of studies involving university students demonstrating what they had learned from reading educational prose and describing how they approached this task, Marton and Saljo identified two basic approaches, initially described as either surface-level or deep-level 'processing'. The findings of their studies also identified a direct association between the approaches adopted and the nature of learning outcomes achieved (Marton and Saljo, 1997).

The two approaches have different characteristics. A surface approach emphasises rote memorisation of unrelated facts for the main purpose of

recall for examinations, while a deep approach involves an intention of understanding and relating new learning to existing knowledge and understanding (Entwistle, 1997).

A deep approach is argued to be more desirable for the achievement of high quality learning outcomes (Meyer, 1998; Prosser and Trigwell, 1999; Ramsden, 2003). Marton and Saljo's (1976a,b) findings that students who adopted a deep approach were able to recall more several weeks later than those using a surface approach provided the early evidence in support of this assertion. Although Marton and Saljo's research (1976a,b) focused on reading tasks and involved small samples (Entwistle, 1988), studies into other types of learning activities have confirmed the presence of different ways of approaching learning (Ramsden, 2003).

Webb (1997) has argued that the perceived wisdom that high quality learning outcomes are associated with a deep approach has led to a belief that the adoption of a surface approach is 'bad'. He questioned this assumption on the grounds that the use of memorisation, often integral to the description of a surface approach, has been shown in a number of studies, particularly of Oriental students, to be associated with high levels of understanding, a characteristic central to a deep approach. Webb described this phenomenon as the adoption of a deep approach in terms of intention and a surface approach in terms of process. Research into the approaches to learning of Hong Kong students (Kember and Gow, 1991) is one example which supports

Webb's argument. Webb did not attempt to construct a new or amended understanding of the concepts.

Contextual influences

Researchers tend to agree that the way that learners approach learning is not fixed, but adaptable. Approaches to learning are generally not viewed as inherent characteristics of students, but behaviours which are context-dependent and change in response to the nature of the learning environment (Trigwell et al., 1998; Prosser and Trigwell, 1999; McCune, 2001; Biggs, 2003; Ramsden 2003). Thomas and Bain (1982) measured the effect of different assessment formats on psychology students' approaches to learning. They found use of the same approaches to learning across different formats and over time. However, they recognised that the short time span of the study might have been insufficient to identify any effects, a criticism supported by Fuller (1999). They also assumed that the nature of what was being assessed in an essay was different from that which an 'objective' assessment would measure.

McCune's (2001) study covered an academic year. Data obtained from psychology students identified little change in approaches to learning over that time, supporting the findings of Thomas and Bain (1988). McCune (2001) considered the influences on students' approaches to learning and identified numerous contextual and non-contextual factors which could influence these in different ways, at different times, and in complex and unpredictable ways.

In contrast, the study by Severiens et al. (2001) supported the notion of change. Students completed part of the Inventory of Learning Styles (ILS) (Vermunt and van Rijswijk, 1988) at the start and end of an academic year. Statistical analysis identified a decline, over time, in the surface approaches found in the first part of the study. Fuller (1999) also concluded in his study, which measured several conceptual factors which the literature argues influence students' learning outcomes, that approaches to learning are variable and sensitive to the influences of a range of factors, only some of which are contextual and can be controlled by educators. Non-contextual influencing factors include the impact of external demands like employment.

Despite the lack of clarity regarding the influence of different factors on approaches to learning, overall, contextual issues do appear to be important. A number of contextual variables have been proposed to influence students' approaches to learning, including teaching approaches, learning activities, assessment formats and workload (Prosser and Trigwell, 1999; McCune, 2001; Biggs, 2003, Ramsden, 2003). Some research has identified high sensitivity to contextual variables. For example, Meyer and Watson (1991) demonstrated significant variations in approaches relating to particular elements of an occupational therapy programme.

Eley (1992) measured the approaches to learning of students concurrently undertaking two courses of study whose characteristics differed, to identify whether the approaches adopted were responsive to this variation. The findings demonstrated that the students adopted different approaches to

learning depending on the nature of the learning experiences in each course. Eley identified a range of factors for consideration when evaluating the strength of the results, but, overall, supported the literature which demonstrated a direct effect of context on approaches to learning eg. Ramsden (1979), Ramsden and Entwistle (1981).

Influence of teaching approaches

The premise is that teaching focusing on didactic transmission of facts will encourage students to adopt a surface approach to learning, while a student-focused approach which encourages active learning will encourage adoption of more desirable deep approaches to learning. A large study across a range of departments and universities found strong correlations between student focused approaches to teaching and deep approaches to learning (Trigwell et al., 1998).

Workload influences

Workload has been found to affect approaches to learning. Meyer and Sass (1993) investigated the effect of workload demands on engineering students' approaches to learning. Although the data collection instrument was not identified, quantitative results were presented which demonstrated that high perceived workload demands altered approaches to learning in undesirable directions. Despite intentions to take deep approaches to learning, the study found that students adopted an approach aimed at passing examinations.

Approaches to learning of non-traditional students

Nurses on a post-graduate programme were found to consistently favour use of a deep approach to learning to achieve understanding of material (Sutherland, 1999). Such an outcome may not be considered unexpected at post-graduate level. However, Richardson (1995) found similar results when he compared the approaches to learning of mature and school-leaver students enrolled on the same under-graduate social science course. The mature students' scores were higher on the deep approach subscales and lower on the surface approach subscales than the younger students. Meyer et al. (1990a) also found that educationally disadvantaged students' approaches to learning were similar to those of students from stronger academic backgrounds.

Influence on learning outcomes

The influence of approaches to learning on learning outcomes has been argued to be powerful (Prosser and Trigwell, 1999). It is claimed that if educational experiences, particularly in relation to assessment (Biggs, 2003), encourage a surface approach, although successful in passing the assessment, that learning will lack depth, and retention will be poor. In contrast, if students are encouraged to adopt deep approaches to learning, they are more likely to retain what has been learned. Even considering Webb's (1997) deconstruction of the structures of surface and deep approaches, research into the relationship between approaches to learning and the quality of learning outcomes overall supports the presence of an

association, with a deep approach to learning being linked with understanding and long term retention.

Meyer et al. (1990b) investigated this relationship in engineering students. Statistical comparison between scores on the Approaches to Studying Inventory (ASI) (Entwistle and Ramsden, 1983) and assessment scores identified a positive relationship between deep approaches to learning and high levels of achievement. An investigation by Entwistle et al. (1991) into the approaches to learning of failing students also provided evidence that different approaches to learning are associated with different learning outcomes. Comparison with passing students identified that successful students had coherent, mostly deep approaches to learning, while those who failed had inconsistent, disintegrated approaches.

The influence of the learning environment on approaches to learning and learning outcomes was explicitly investigated by Trigwell and Prosser (1991a, 1991b) in two studies of nursing students. A number of data collection methods was used, including a modified ASI, the Structured Observation of Learning Outcomes (SOLO) taxonomy (Biggs and Collis, 1982) and the Course Experience Questionnaire (CEQ) (Ramsden, 2003) . The authors concluded that the research had identified the presence of associations among perceptions of the learning environment, approaches to learning and learning outcomes, with students who identified deep approaches achieving higher quality outcomes. The same association was found in the study by Kember and Harper (1987). Although the courses being studied were not

identified, respondents to the ASI were stated to be studying in both university-based and distance learning modes.

There are a number of methodological differences and weaknesses within and among studies into approaches to learning, including variable sample sizes and different data collection instruments and methods. However, the published research does posit an association between students' approaches to learning and learning outcomes, with deep approaches being linked with positive outcomes. However, there are also studies which have not found such relationships. For example, Londblom-Ylanne and Lonka (2001) found that successful learning outcomes in psychology students were associated with both surface and deep approaches to learning. They compared these findings with those from a similar study they had undertaken on medical students, which had identified that surface approaches were associated with poorer learning outcomes. These inconsistencies led them to conclude that there was a relationship between approaches to learning and learning outcomes, but that its nature was influenced by several external variables, including the nature of the learning experience.

Overview

Overall, the literature on approaches to learning identifies that, although differences in approaches do exist, the influence which a number of intrinsic and extrinsic factors including delivery methods, support systems, course demands and assessment formats has on these makes understanding and interpretation of these constructs difficult (Entwistle, 2000). These

complexities, in turn, weaken the posited relationship between approaches to learning and the quality of learning outcomes. However, the literature does posit that deep approaches to learning, simply due to their focus on achieving understanding, are more likely than surface approaches to facilitate achievement of desirable high quality learning outcomes (Entwistle, 2000).

Conceptions of learning

Devlin (2002) defined a conception as 'the fundamental way a person understands a phenomenon in the surrounding world', supporting Marton et al. (1993) that the term refers to 'experiential reality'. Despite the presence of such definitions, the nature of a 'conception' in research into student learning has been debated (Uljens, 1993), particularly within the phenomenographic approach (Saljo, 1996). However, no alternatives have been proposed. The descriptions given by Marton et al. (1993) and Devlin (2002) will be adopted for this study

The work widely accepted as establishing the notion of 'conceptions of learning' within research into student learning was undertaken by Saljo (1979). The justification given for asking students 'What do you actually mean by learning?', was findings from phenomenological studies which suggested that people's beliefs about the nature of learning influenced the way they undertook learning activities, and the earlier identification (Marton and Saljo, 1976a) of two differing approaches to learning. Saljo posited a

likely association between conceptions of learning and approaches to learning.

In Saljo's study, 90 interviewees were divided into sub-groups depending on whether they were 'young' (15–23 years) or 'adult' (27–73 years) and their level of formal education. However, results for the six sub-groups were not addressed, and comprehensive findings for the whole group were presented. The study identified five conceptions of learning:

1. Learning as the increase of knowledge
2. Learning as memorising
3. Learning as the acquisition of facts, procedures etc. which can be retained and/or utilised in practice
4. Learning as the abstraction of meaning
5. Learning as an interpretive process aimed at the understanding of reality

The inclusion of extensive verbatim quotations enabled external validation of the presence of these five separate conceptions. In addition to identifying a number of conceptions, Saljo also posited that the first three conceptions involved a belief that knowledge is external and to be acquired by the learner while the last two put the learner at the centre of change.

Another feature of the findings of the Saljo (1979) study was that the five identified conceptions formed a hierarchical nested relationship in that conception 2 included that of conception 1, and so on. This outcome

informed the development of phenomenography (Entwistle, 1997) in which the presence of such a hierarchical relationship among conceptions is anticipated (Trigwell, 1997).

Saljo (1979) concluded that the two main groupings found within conceptions of learning bore strong resemblances to the two approaches to learning and that conceptions and approaches were directly related. He did, however, also state that this association was 'symbolic' rather than 'causal' and that an individual could hold a particular conception of learning, but adopt different approaches to learning in different situations.

Subsequent research confirmed the presence of a number of conceptions of learning. Van Rossum and Schenk (1984), in their study of psychology students, identified similar conceptions of learning to those found by Saljo:

1. Increase in passive knowledge
2. Memorisation of all apparently relevant facts
3. Acquisition of usable facts
4. Abstraction of meaning
5. Understanding reality.

Van Rossum et al. (1985) subsequently found the same conceptions of learning among arts students.

In addition, van Rossum and Schenk (1984) found that students' conceptions of learning and approaches to learning were directly related, with lower level conceptions being associated with surface approaches and poorer quality learning outcomes, and higher level conceptions being associated with deep approaches and higher quality outcomes. Marton and Saljo (1997) supported the links found between the different levels of conceptions of learning and approaches to learning. This raises questions regarding the extent of the 'symbolic' nature of the relationship proposed in the Saljo (1979) paper.

Marton et al. (1993) also cited the independent findings by Giorgi in 1986 of the same five conceptions of learning as those identified by Saljo (1979). In their study of social science students, from interviews across six years of study, Marton et al. (1993) identified six conceptions of learning:

1. Increasing one's knowledge
2. Memorising and reproducing
3. Applying
4. Understanding
5. Seeing something in a different way
6. Changing as a person

The first five were stated by Marton et al. (1993) to be 'identical' to those identified by Saljo (1979). However, although some mention was made of Saljo's findings in the discussion of their own findings, no consistent comparison was made to support this assertion. Prosser and Trigwell's (1999)

use of the less absolute term 'evidence' of Saljo's first five conceptions in relation to the Marton et al. study provides a more balanced interpretation. Uljens (1996) also raised concerns around the acceptance of the first five conceptions as being the same when there are differences in the background, context and age of participants in these studies. However, he did not compare the descriptions within the studies to identify whether the conceptions were similar.

The possibility that conceptions of learning are universal in nature appears to be debatable. Despite the similarities found in earlier studies, research has not always found the same set of five conceptions and/or has identified additional ones, as the Marton et al. (1993) investigation itself did. Marton et al. (1993) acknowledged that the backgrounds of the students in their study differed from those in other studies, but did not consider the implications of this for the conceptions identified, or their similarity to those from other studies.

Mugler and Landbeck (2000) reviewed a number of other studies, some of which had identified all of the conceptions found by Saljo (1979), but others which had found only some of these. A cross-cultural study of Australian and Japanese school students identified nine conceptions of learning (Purdie et al, 1996). Six of the conceptions were similar to those described by Saljo and Marton et al. However, the authors stressed that they only bore some resemblance. Purdie et al. (1996) considered how the nature of the six categories of description differed from those of Saljo/Marton et al. and also

demonstrated that the three additional conceptions were separate entities. They did not discuss the presence or absence of a hierarchical relationship among the categories, possibly because the study did not involve a phenomenographic approach.

Mugler and Landbeck (2000) investigated South Pacific students who were largely mature and studying in a part-time distance mode. The only conception of learning not found of the six identified by Saljo and Marton et al. was the one focusing on memorisation and recall. This absence mirrored findings in other Pacific and Asian countries where memorisation is interpreted differently. Despite the similarities, Mugler and Landbeck identified that the descriptions enshrined within some of the conceptions did not have the same meanings as they did in other studies. For example, one response focused on application, but, in their study, this included an important element of understanding, a qualitative aspect not usually associated with the quantitative third conception of learning (Mugler and Landbeck, 2000).

Unlike Purdie et al. (1996) and Mugler and Landbeck (2000), who consciously avoided being influenced by their knowledge of the conceptions of learning identified in earlier research, McLean (2001) used the Saljo-Marton et al. six conceptions of learning as the structure for data analysis. She interviewed medical students who had a range of assessment results. Responses in all six conceptions were identified. However, conception 5 was absent in the lowest achieving students. As in other investigations, this study found that the majority of students held lower order conceptions of learning. It also found an

association of increasing complexity of conceptions with better assessment outcomes.

Devlin (2002) also deliberately used the Saljo/Marton et al. six conception structure and fitted all the responses from the under-graduate students from all years who were involved in the study into them. There was a lack of detail of the method, although it appears that qualitative approaches were used, including the SOLO taxonomy, which has been used in other studies into student learning eg. Boulton-Lewis et al. (1996), Prosser et al. (1995). The absence of responses at the level of conception 6 was not discussed. As in the McLean (2001) study, the majority of responses were lower order in nature.

It is unclear whether the conceptions derived by Cliff (1998) were arrived at independently of the Saljo/Marton et al. conceptions or not. As in the Marton et al. (1993) investigation, Cliff (1998) undertook a study of post-graduate mature students. All six of the Marton et al. (1993) conceptions of learning were identified at the start of the one-year programme. This finding supports those of Marton et al. (1993), to some extent, although, as was the case for Marton et al. in comparison with the Saljo (1979) investigation, an additional conception was also found. This perceived learning as a moral obligation to a higher authority. Cliff (1998) proposed that the presence of this conception perhaps reflected cultural effects, as most of these students had indigenous South African backgrounds.

These studies provide further evidence that, although commonalities may be present, conceptions of learning may be neither the same, despite apparent similarities in their names, nor universal.

The existence of a hierarchical model like that found by Saljo (1979) has also been challenged. Research has identified complex interactions among conceptions of learning (Meyer, 1995). In addition, research also does not support a strong relationship between conceptions of learning and approaches to learning as was found by van Rossum and Schenk (1984). For example, Fuller (1999) collected data on conceptions of learning from under-graduate and post-graduate students using the Reflections on Learning Inventory (RoLI) (Meyer and Boulton-Lewis, 1997) and on approaches to learning with the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich et al., 1991) and the Study Processes Questionnaire (SPQ) (Biggs, 1987). Although some positive associations were found, these were not strong and no pattern emerged. Fuller concluded that the association between conceptions of learning and approaches to learning is not as strong as proposed. He considered that issues around the reliability and validity of some of the instruments used (Richardson, 1990) could have influenced the outcomes.

Conceptions of learning of non-traditional students

A number of investigations by Boulton-Lewis and others into the learning of indigenous Australian students provided insights into the conceptions of learning of students from non-traditional backgrounds over time.

In their first year of study, Aboriginal and Torres Strait Islander students identified three main conceptions of learning, two with sub-divisions:

- Acquiring knowledge
    - Increasing knowledge
    - Using knowledge
- Understanding
    - Acquisition
    - Acquisition and use
    - Relating, elaborating, analysing
- Personal growth

(Boulton-Lewis et al., 2000a,b)

Comparison with the Saljo/Marton et al. conceptions (Boulton-Lewis et al., 2000a) identified that, while some were similar, others differed. For example, 'increasing knowledge' was perceived to be the same as Saljo's conception 1. However, 'using knowledge' was argued to be similar, but not the same as Saljo's conception 2. Boulton-Lewis et al. (2000a) did not explain where differences lay. They did identify that none of the conceptions was at the level of conceptions 5 or 6 (Marton et al., 1993), demonstrating that the original Saljo/Marton et al. conceptions are not universal. Although not proposed, it can be inferred from the discussion in the Boulton-Lewis et al. (2000a) study that differences may reflect different cultural and experiential backgrounds of students. As in other studies, the students predominantly held lower order conceptions of learning (Boulton-Lewis et al., 2000b).

In what became a longitudinal study, Boulton-Lewis et al. (2001) investigated the same factors in the students' second year of study. Phenomenographic analysis identified that the conceptions for acquiring and understanding were still present. The personal growth conception was not, but two others were:

- Seeing something differently
- Change in thinking and understanding

Consideration of the nature of these two conceptions and comparison with the Saljo/Marton et al. conceptions identified that 'seeing something differently' was the same as conception 5 (Marton et al. 1993), while the 'change' conceptions identified by Boulton-Lewis et al. (2001) differed from the Marton et al. conception 6.

Tracking of the level of conceptions held by individual students identified some change in both directions, while some were unchanged. Although only found for some participants, Boulton-Lewis et al. (2001) concluded that their study supported the proposition by Entwistle (1997) that students' conceptions of learning can change and move in more desirable directions over time in response to their educational and learning experiences.

By the third year of study, fifteen of the original 22 students remained (Boulton-Lewis et al., 2003) and the conceptions of learning identified from interview with them were:

- Acquiring knowledge
    a. Using knowledge

- Understanding
    b. Acquisition
    c. Acquisition and use
    d. Relating, elaborating, analysing
- Seeing something differently
- Change in thinking and understanding

The majority of participants' conceptions remained the same, with the majority being of a lower order. Review by Boulton-Lewis (2003) of the parity between the conceptions of learning and approaches to learning adopted by the students who took part in all three stages of the study identified that alignment between them was only present on some occasions. A general improvement in alignment was found over time, but not in all students. Despite these issues, all had successfully reached the third year of study.

In a further consideration of the research, Boulton-Lewis et al. (2004) posited that the students had been successful, despite the weakness of the alignment between conceptions and approaches to learning, which would potentially challenge success in assessment, because of their strong motivation to succeed, and the resulting hard work and effort they had put into their studies. They argued that it was the approaches to learning used, rather than the conceptions of learning held by the students, which was problematic. They suggested that the continued use of weaker approaches to studying was attributable to their limited educational backgrounds which led to them dealing superficially with material even when they wished to gain more in-depth

understanding. With regard to the continued presence of lower order conceptions of learning over time, Boulton-Lewis et al. (2003) suggested that this had been the result of non-robust prior educational experiences which did not prepare them appropriately for higher education. No evidence was provided to support this assertion. No discussion considering hierarchical relationships was included in any of the papers (Boulton-Lewis et al. 2000a,b; 2001; 2003).

Other longitudinal studies

Other longitudinal investigations into students' conceptions of learning have also produced a mixed picture regarding development of students' conceptions of learning over time. Perry's study (1970, cited in Entwistle, 1988; Zhang and Watkins, 2001) undertaken in the 1950s and 1960s into the intellectual development of humanities students was one of the first sources of longitudinal evidence. Although this study preceded specific identification of the notion of 'conceptions of learning' among students, its focus was similar enough for its results to be relevant in this context.

Across the study, Perry identified that students progressed predictably along part or all of nine positions along a continuum which had an absolutist dimension at one end, followed by a period of uncertainty associated with the realisation that knowledge is not absolute, to an acceptance of 'contextual relativist thinking' at the other end. Zhang and Watkins (2001) suggest that lower order conceptions of learning and surface approaches to learning would be associated with the absolutist end of the continuum with higher order

conceptions and deep approaches being found as students moved towards the relativist end.

Entwistle (1988) recognised the contribution which Perry's study had made, but noted that there was no consideration of factors which could have influenced the identified changes. He also suggested that data from science students might have been different. Zhang and Watkins (2001) commented on the male gender bias in the study. Despite its weaknesses, Perry's study was central in acknowledging that students' thinking can change over time.

Temporal changes in conceptions of learning were also investigated by Marton et al. (Marton et al., 1993; Morgan and Beaty 1997). A question focusing on conceptions of learning was asked of mature students during interviews undertaken annually during a part-time distance learning degree programme. An additional conception was found in addition to the five identified by Saljo (1979). Marton et al. (1993) noted that fewer than half of the 29 students interviewed in their first year of study held quantitative conceptions of learning, an outcome which contradicted other studies eg. van Rossum and Schenk (1984), Boulton-Lewis (2000b), McLean (2001) and Devlin (2002). This finding was also contrary to those found for the largely mature, distance learners investigated by Mugler and Landbeck (2000). Despite the presence of some similarities between the students in these two studies, it is possible that their different cultural backgrounds might have influenced the findings.

One of the explanations proposed by Marton et al. (1993) for the finding of largely higher order conceptions of learning was the high levels of motivation common in older students. This is possible, but does not support the findings of Boulton-Lewis et al. (2004) in which motivation of mature students was very high, but conceptions of learning were largely lower order.

Marton et al. (1993) and Morgan and Beaty (1997) identified a pattern of change and development in thinking across their participants over time, with more higher level conceptions being expressed later in the programme. However, the very high attrition rate after the first year was recognised and conclusions regarding change over time were drawn cautiously. Marton et al. (1993) also recognised that the students in their study varied in a number of ways from the usual university student and did not generalise their findings to the larger population.

In Cliff's (1998) study, analysis identified that the majority of participants held lower order conceptions of learning which were stable over time. Although these were post-graduate students who might be anticipated to hold more complex conceptions, as found by Marton et al. (1993), Cliff (1998) suggested that the disadvantaged educational backgrounds of these students might not have facilitated development of more qualitative conceptions.

Other studies support the Marton et al. (1993) and Boulton-Lewis et al. (2001, 2003) findings of developments in conceptions of learning over time. However, there are methodological weaknesses in some. Investigation of the

conceptions of learning of nursing students undertaken by Eklund-Myrskog (1997) would have been of interest to the current research, with its health focus. However, details of the method used were unclear. Although the title of the paper indicates it was a longitudinal study, it appears that different groups were interviewed on each occasion. Although a direct association between low level conceptions and surface approaches and between higher level conceptions and deep approaches to learning was posited, the methodological issues already identified challenge acceptance of this interpretation.

Overview

As for the literature on approaches to learning, that on conceptions of learning contains conflicting results which makes drawing conclusions difficult. Overall, the literature consistently identifies that groups of students hold a range of conceptions of learning. How similar or consistent these are across different student groups is, however, less clear. Research examining parity of conceptions across studies suggests that conclusions need to be drawn cautiously, with careful consideration needed of the nature of the experiences which informed each conception. There is also equivocal evidence regarding developments in students' conceptions over time, both within and across groups. Although there is more evidence that change can be brought about by educational experiences, it is not a certainty. The evidence for the presence of a direct relationship between conceptions of learning and approaches to learning is also inconclusive.

Conceptions of understanding and memorisation

Less work has been undertaken into students' conceptions of understanding, despite the recognition of this as a central element of student learning (Entwistle and Marton, 1994). There is no agreement regarding what the term 'understanding' means (Burns et al., 1991; Biggs, 2003), or relating to what students perceive 'learning', 'understanding' and 'memorisation' to be (Entwistle and EntwIstle, 2001). Some researchers have used the terms 'learning' and 'understanding' interchangeably, while Boulton-Lewis et al. (2004), when investigating conceptions of learning, sometimes specifically asked about understanding.

Newton et al. (1998) and Buns et al. (1991) argue that, while learning can be rote, understanding is a dynamic process requiring active engagement of the learner. Burns et al. (1991) cite several authors in support of this interpretation and also derive from this a prerequisite that understanding requires the presence of some level of background knowledge. For the current study, the meaning of 'understanding' is that used by Entwistle and Entwistle (2001) as 'comprehension' or 'grasping the overall meaning'.

Conceptions of understanding

Entwistle and Entwistle (1992) investigated the nature of understanding of eleven final year psychology and zoology students. The interviews explored this in relation to revision for final examinations. Phenomenographic analysis of the interview data identified six categories of description:

- Feelings of satisfaction (insight)
- Meaning and significance
- Coherence, connectedness and 'provisional wholeness' (things clicking into place)
- Relative irreversibility
- Confidence about explaining
- Flexibility in adapting and applying

These conceptions were presented as if there was a hierarchical relationship among them, although this was not explicitly stated. Entwistle and Entwistle (1992) argued that these conceptions demonstrated that understanding is more an experience than an intellectual process. Entwistle and Entwistle (1992) did not discuss the implications of these findings for learning, either in this, or later papers (Entwistle and Marton, 1994; Entwistle, 1995) which considered the same study. They did identify methodological limitations, including the small sample size, representation from a limited range of subject areas, and sampling from mainly high achieving students. However, this study did provide important primary information on which later research could build.

Although undertaken on secondary school students, the findings by Burns et al. (1991) provide a useful comparison with those of Entwistle and Entwistle (1992). Both studies were undertaken at a similar time and specifically investigated conceptions of understanding. Analysis of the 39 interviews by Burns et al. (1991) identified the following conceptions:

- Makes a whole
- Know the point
- Know why
- Relate it to other things
- Makes sense
- Know how
- Know what

These findings differed in a number of ways from those of Entwistle and Entwistle. There were a larger number of conceptions, they were not presented as having a hierarchical relationship, and the meanings of those conceptions which were present in both studies were not always the same. For example, the Burns et al. conception 'Makes a whole' includes both Entwistle and Entwistle's 'Feelings of satisfaction' and 'Coherence, connectedness etc'. This supports the importance, identified with regard to conceptions of learning, that consideration of the wording of conceptions is insufficient and that the descriptions which inform each category also need to be taken into account.

The students who were studied by van Rossum et al. (1985) were asked 'What do you mean by understanding a text?' All the perceptions held by the students agreed with some, but not all, of those encompassed within the outcome spaces found by Entwistle and Entwistle (1992) and Burns et al. (1991).

Despite the differences in sample sizes, participants' backgrounds, and the findings in these three studies, each posits that, as research has found for 'learning', that there is variation in the way in which learners conceive of 'understanding', and that there is a level of agreement across different groups.

The presence of differences in conceptions of understanding in learners in different disciplines was investigated by Newton et al. (1998). Recent graduates described understanding in relation to their discipline. Phenomenographic analysis identified the following conceptions of understanding:

- Science graduates
    - Understanding as a capability in application (know how)
    - Understanding as establishing a mental structure
- History graduates
    - Understanding as reconstructions of events

The authors posited that the science graduates' 'mental structure' conception possessed some similarities to the history graduates conception, but that they were not identical. They concluded that, despite the presence of some similarity in perceptions of the nature of understanding across different disciplines, differences also existed. The small number of conceptions found in the Newton et al. (1998) study compared to those identified by Entwistle and Entwistle (1992) is notable. As with the Burns et al. (1992) investigation, the findings support the presence of a range of conceptions, but there is limited evidence for consistent similarity.

South Pacific students' conceptions of understanding were also investigated by Mugler and Landbeck (2000). The following conceptions were found (Mugler and Landbeck, 2000; Bouton-Lewis et al., 2004):

- Knowing
    - Knowing the text
    - Knowing what to do
    - Being able to explain to others
    - Being able to do what the teacher explains
- Meaning
    - Knowing what the subject is about
    - Developing a personal interpretation
- Depth
    - Going deeper into a subject

It is unfortunate that Mugler and Landbeck did not present a clear outcome space for this part of their findings, making it difficult to compare their findings with other studies. However, their work does identify a variety of conceptions of understanding, with some being similar to those found in other investigations.

Learning and understanding

Although the studies considered above investigated the concept of understanding as an independent factor, research into conceptions of learning has consistently identified a strong association between learning and

understanding. For example, in the longitudinal study by Boulton-Lewis et al. (2003, 2004), 'Understanding' was the second of the five overall conceptions of learning found. In other studies into conceptions of learning eg. Saljo (1979), van Rossum and Schenk (1984), Marton et al. (1993), Mugler and Landbeck (2000), conceptions involving understanding were also identified, often at the higher order levels These findings identify that, although it exists in its own right, the concept of 'understanding' is often closely associated with the concept of 'learning'.

Understanding and memorisation

The presence of relationships between understanding and memorisation has also been found in research into student learning. However, the nature of this association has proved to be more complex and variable than was initially accepted. Early research and subsequent modelling linked memorisation with a surface approach to learning, while a deep approach was associated with an intention to understand. Although the intention to understand had been identified within a deep approach, little had been considered regarding process, with an assumption being made that the process of seeking understanding formed the procedural element, without consideration of the actual processes adopted (Kember and Gow, 1991). Webb's (1997) deconstruction of this simple binary model was appropriately based on citation of research, initially undertaken on Chinese students eg. Kember and Gow (1991), which identified that understanding and memorisation can have a much more complex and close relationship than that suggested by the research into approaches to learning.

It had been noted that Asian students tend not to conform to the established approaches to learning models. Research has demonstrated that they are high achievers with a strong intention to understand (Marton et al., 2005). However, in contrast to the learning processes associated with a deep approach, they rely heavily on rote learning and memorisation (Kember and Gow, 1991), a characteristic described as the 'paradox of the Chinese learner' (Marton et al., 1997). Kember (1996) described the features of this approach as consisting of an intention to both understand and memorise.

A number of studies have been conducted on school and university students and tutors in the Far East to clarify the situation. Studies have also compared the approaches to learning of Asian students with those of Western students, in Western universities. Much of the earlier research utilised inventories such as the ASI and SPQ (Kember, 1996). Qualitative studies were also undertaken, with outcomes which supported those from the quantitative work. The research identified more than one form of memorisation. Unlike the rote memorisation which occurs in the 'surface memorisation' (Prosser and Trigwell, 1999) associated with a surface approach, 'deep memorisation' (Tang, 1998, Biggs, 2003) involves use of repetitive work and memorisation underpinned by the purpose of also understanding what has been memorised. The use of repetition in deep memorisation is the means by which this understanding is reached and is different from the repetition involved in surface memorisation. Within the study by Mugler and Landbeck (2000) the South Pacific students also held the perception that memorisation could take

place either with or without understanding. These findings provided further evidence for separate 'surface' and 'deep' memorisation processes.

The identification of the presence of two approaches to memorisation required refinement of the established descriptions of the characteristics of surface and deep approaches to learning. Procedurally, memorisation is present in both, but the differences in intention between the two informs the nature of the memorisation process undertaken, and the quality of resulting learning outcomes (Prosser and Trigwell, 1999).

Further dimensions regarding the relationship between understanding and memorisation in terms of actual learning processes have also been found. Marton et al. (1992, cited in Kember, 1996), in interviews with lecturers in China, and Marton et al. (1997), in their interviews with school students in Hong Kong, found a number of variations in the relationship between memorisation and understanding. Phenomenographic analysis identified that these were: understanding preceding memorisation, memorisation preceding understanding (Kember, 1996) and understanding and memorisation occurring concurrently, described as 'memorising with understanding' by Au and Entwistle (1999).

Although identified in Asian learners, it was recognised that similar variations may also be found in Western cultures (Kember, 1996). Au and Entwistle (1999) confirmed the existence of the 'memorisation with understanding' variation in Chinese learners. Comparison of these findings with those of an

earlier study involving British students suggested that this conception could also be held by students from Western cultures. Au and Entwistle (1999) cautioned that the meaning of 'understanding' and 'memorisation' may be different in the two languages and that, as for conceptions of learning and understanding, the meaning may not be the same universally. They also noted that the nature of assessment had a direct influence on students' approaches to learning and, thus, on the interplay between understanding and memorisation, at different times. Entwistle and Entwistle (2001) also identified the presence of surface and deep memorisation approaches in British students, positing that the dimensions found initially in Oriental learners may not be limited to specific cultures.

Meyer (1999, 2000a) tested for the existence of 'understanding preceding memorisation' and 'memorisation preceding understanding' as psychometrically separate entities. Parts of the ASI and RoLI were completed by economics students in Australia. Statistical analysis confirmed that these two conceptions were discrete and contrasting forms of this relationship. As this study took place in a Western culture, it supports Kember's suggestion (1996) that the possible relationships initially identified in Eastern cultures are more generic. Meyer (2000a) concluded that the findings from this study were strong enough to contraindicate use of more general descriptions of memorisation when researching student learning. The large sample size and use of a number of analytical methods make these findings particularly robust.

A later version of the RoLI also includes subscales for 'memorising with understanding'. Meyer (2000b) supports its inclusion on the basis of the findings of the phenomenographic studies described earlier. The existence of 'memorising with understanding' as another discrete form of memorisation has been confirmed psychometrically (Meyer and Shanahan, 2001), also on Australian students. This outcome further posits that this conception is not culturally exclusive.

Overview

The literature on the relationship between understanding and memorisation has, in some ways, been challenging to interpret. This difficulty is associated with the sometimes subtle differences which different researchers have presented as representing the nature of variations to be found within this relationship. This is similar to the nuances involved in considering the meaning of conceptions of 'learning' and 'understanding' . However, the impact of possible effects of culture and language is perhaps greatest in relation to 'understanding-memorisation'. Overall, though, the literature has established that memorisation is not exclusively associated with surface approaches to learning, that there are a number of ways in which these two concepts are perceived to relate to one another, and that the presence of these variations is more universal than was initially accepted.

Maturity and life experience

Although it largely post-dates the development of the physiotherapy programme under consideration, the current widening participation agenda has provided a useful context within which to consider issues, and has also generated useful discussion and research. Widespread debate has included consideration of whether students from non-traditional backgrounds are 'suitable' for university education and/or whether university education is appropriate for them without a need to 'dumb down' or alter its fundamental purposes and nature (Richardson, 1994). Although higher education challenges these students, the outcomes achieved have generally demonstrated that they are successfully able to meet these challenges (Richardson, 1994; Warwick, 1999a). More specifically, similar outcomes have also been found in allied health education (Green and Waterfield, 1997; Shanahan, 2000).

Students from non-traditional backgrounds are generally older than other students and have, by definition, greater life experience. These factors and associated high levels of motivation, perseverance and conscientious study appear to outweigh the potential disadvantages associated with weaker academic backgrounds (Richardson, 1994, 1995; Warwick, 1999b). Richardson (1995) found no evidence to support the assumption that those who enter higher education later in life are deficient in the skills necessary for successful study.

Studies have identified that motivation is central to mature students' decisions both to undertake and succeed in higher education. Both positive and negative influences have been identified. Positive factors include interest, self-belief, welcoming institutions, family support, employer support and career benefits (Woodley et al., 1987; Wilson, 1997; Tett, 1999; Olaussen and Braten, 2001; Osborne et al., 2004). Constraints have included lack of self-confidence, financial issues, unwelcoming institutions, family and employment issues, and reduction in social contacts (Woodley et al., 1987; Young, 1990; Wilson, 1997; Tett, 1999; Osborne et al., 2004). The overall success of mature students suggests that positive factors outweigh the negative ones.

High levels of motivation in mature students encourage achievement of high quality learning outcomes (Young, 1990). Wilkinson et al. (2004) found that mature age was a stronger predictor of success on a medical programme than possession of a prior degree. They attributed this age-related advantage to certainty and motivation relating to career choice. These findings support the other evidence that successful performance does not rely on high prior academic achievement.

It has also been postulated that the life experience associated with mature age confers advantages regarding learning which favours successful performance by older students. The central importance of prior experiences of learning on student learning is well established in educational research and associated models (Prosser and Trigwell, 1999; Biggs, 2003).

Brookfield (2000) uses evidence from research into adult learning to support his argument that certain capacities relevant to learning are more prominent in adults than they are in younger people. He presents four concepts which inform his position. 'Dialectic thinking' is associated with greater ability of older people to recognise and accept the uncertainties which exist in relation to knowledge and the real world and 'practical logic' values insights which rely on learning from experience. The third concept refers to a capacity to 'know how we know what we know', an awareness which, again, is associated with greater experiential understanding of the world, and 'critical reflection' in which greater life experience enables the individual to judge the extent to which the real world relates to the expectations developed while younger.

The characteristics of the concept of andragogy (Knowles, 1990) support Brookfield's position. Although evidence for the existence of andragogy as a single, separate concept is limited, when the work of authors like Knowles and Brookfield is considered along with the empirical findings of the learning outcomes in higher education of mature students, support for the argument that the increased life experience associated with older age facilitates learning is strengthened. Boulton-Lewis et al. (2000a) describe the learning which students obtain from life experience as 'informal' and that associated with university education as 'formal'. Informal learning is described as 'natural learning' and defined as 'that which takes place without the specific designation of teacher and student and outside the framework of a curriculum established by parties beyond both student and teacher' (Heath 1991, cited in Boulton-Lewis et al., 2000b).

The knowledge which students possess as a result of life experience is also an important consideration. Some studies have considered the impact of life experience rather than formal learning experiences. Dochy et al. (1999) identified, in their comprehensive review, that prior knowledge has been associated more often with positive than with negative learning outcomes.

One of the themes that emerged in Shanahan's study (2000) on the learning experiences of mature occupational therapy students was the positive effects which previous employment and life experience were perceived to have in several areas of learning, including clinical placements. Although there were some methodological weaknesses in the study, the findings were well supported with quotations and explanations.

The positive conclusions in the literature on the impact of mature age and greater life experiences on achievement in higher education posit that the existing and ongoing clinical experience of students on the physiotherapy programme under consideration should be an advantage. In addition, the fact that these students were both working in and studying physiotherapy should be an added strength, as new learning could build on or utilise existing knowledge and skills, which students without such experience would be unable to do.

Summary of literature as it relates to the research questions

Research supports the existence of deep and surface approaches to learning, with the former associated with higher quality learning outcomes. The approaches adopted are influenced by a number of factors including student characteristics, learning context, workload and assessment requirements. Students have also been found to hold a range of conceptions of the nature of learning, which vary in complexity. These are posited to be sensitive to the nature of educational experiences and able to develop over time. An association between conceptions of learning and approaches to learning has been posited, but evidence for this is inconclusive.

Variation exists concerning students' conceptions of understanding, and its relationship with memorisaton. Higher quality learning outcomes have been associated with understanding preceding memorisation

The characteristics of students from non-traditional backgrounds, including mature age, life experience and high levels of motivation are associated with successful study in higher education

The research questions derived from the literature are:

1. What motivational factors influence the students at the start of the programme and how are these influenced by undertaking the programme?

2. What effect does undertaking the programme have on students' conceptions of the nature of learning, understanding and memorisation?
3. What influences do students' life experiences have on their learning and how does this learning inform their life and employment experiences?
4. What are the students' attitudes towards and learning from their study and assessment experiences as they progress through the programme?

Chapter 3

Methodological issues

Research design

Quantitative and qualitative methodologies have been used in research into student learning. A qualitative approach was used in this study as the nature of the research questions and the small population which was to form the focus of the research indicated that this would be appropriate.

Qualitative research

Qualitative research has been described as a group of approaches which focuses on the experiences of people who share 'time, space and culture', seeking to investigate the 'natural history' of events or relationships rather than trying to control and predict these, as quantitative research does (Frankel and Devers, 2000b). They also recognise that qualitative research is usually inductive rather than deductive, dynamic and flexible, and, although directional, may be 'non-linear'. The data in qualitative research often takes the form of 'thick descriptions' of participants' experiences (Frankel and Devers, 2000a).

Four purposes or types of qualitative research have been proposed (Marshall and Rossman, 1995 cited in Wilson, 1998). Exploratory research investigates

phenomena about which little is known, explanatory research aims to explain the variables which influence phenomena, descriptive research seeks to provide information which enables understanding of phenomena and their experience to be achieved, while predictive research has a prophetic focus. Although a qualitative study may have one of these purposes as a focus, it is possible that some elements of all four types will emerge. The exploratory or discovery aspect is probably the most relevant purpose of qualitative research (Wilson, 1998). This is the case for this study, although explanatory and descriptive elements may also arise from the data.

Although often involving smaller participant numbers than quantitative studies, the different methods and resulting rich data obtained from qualitative studies have added much to the knowledge and understanding of student learning eg. Marton et al. (1993), Wilss et al. (1999), Prosser et al. (1995). The educational context and issues being explored in this study all support use of a qualitative approach.

A continuum of ontological paradigms, ranging from positivist to post-positivist or non-positivist, has been identified within qualitative research (Denzin and Lincoln, 1998). A positivist perspective involves a structured approach, with a focus on pragmatism regarding study design and type of data sought (Silverman, 2001). In contrast, a post-positivist view takes a more open view to the data, and responds to emerging findings (Denzin and Lincoln, 1998). My disciplinary background in the health sciences, experience of undertaking quantitative research, and personal characteristics identify that I am located

towards the positivist end of the spectrum, and the characteristics of this study are likely to reflect this.

There are a number of qualitative approaches which could appropriately have been used in the study eg discourse analysis, phenomenology. However, phenomenography was chosen, as it developed from educational research into student learning and has been widely used to investigate the topic areas of the study.

Phenomenography

Phenomenography, as a distinctive research approach, arose out of work in education undertaken in the 1960s and 1970s in Gothenburg, Sweden, although the name post-dates this work (Marton and Saljo, 1997) and the approach was only labelled in the late 1970s (Dall'Alba, 1996). It has been used most widely in investigations into learning and teaching (Trigwell et al., 2000). The early work developed within an original 'knowledge interest' and not from a particular school of thought (Marton, 1988a). This history led to criticisms of and challenges to the approach which required the Gothenburg researchers to work on constructing an explicit epistemology (Marton, 1988a; Hasselgren and Beach, 1997), a process which continues (Marton and Pang, 1999; Pang, 2003). Some aspects of the approach continue to be challenged, although hundreds of studies involving phenomenography have been published (Sandberg, 1996) and the status of phenomenography as a research approach separate from those which are similar, for instance

phenomenology, has been defended (Uljens, 1996; Svensson, 1997; Hasselgren and Beach, 1997).

The basis of phenomenographic study is that of variation in the ways in which people experience different phenomena (Marton and Booth,1997; Marton and Pang, 1999). The approach focuses on and describes the conceptions, identified by people, which exemplify this variation (Svensson, 1997). It is an approach with a second-order perspective involving study, not of the individual or of phenomena in their own right, but of the experience of the relationship between the individual and the phenomenon under consideration (Marton, 1981; Marton and Booth, 1997; Trigwell, 1997; Trigwell et al., 2000). This is based on the non-dualist position which assumes an internal relationship between an individual and the world rather than a dualist premise where people and the world are constituted independently of one another (Uljens, 1996; Marton and Booth, 1997; Trigwell, 1997).

Data regarding the ways in which participants experience the phenomenon or phenomena under consideration can be obtained in a variety of ways (Marton, 1988a), but procedures commonly involve the use of semi-structured interviews (Marton and Booth, 1997; Saljo, 1997). Interviewing is popular because it produces rich data which allows for identification of the conceptions held by participants (Johansson, 1996).

Phenomenographic analysis

The data is subjected to phenomenographic analysis, the end result of which is a number of 'categories of description' which form the 'outcome space' (Marton and Booth, 1997), a concept which refers to a 'set of possibilities' (Marton, 1988a). Marton et al. (1993) clarify what differentiates 'conceptions' from 'categories of description' in phenomenographic research. Conceptions are the experiences and perceptions which people have of the phenomenon or phenomena under consideration in a study. In contrast, categories of description are not experiential but abstract structures, the wording of which describes or labels those conceptions. The wording used may include words used by participants to describe their experiences, but this is coincidental rather than expected or required. Marton et al. (1993) also highlight that the categories are those identified by the researcher, not by the participants.

Categories of description

It is suggested that the categories of description which form the outcome of phenomenographic analysis be relevant to the focus of the study and that they be as few in number as is necessary to capture all the identified variation in conceptions (Marton and Booth, 1997). The categories have also been argued by some to be logically related and possess hierarchical relationships to each other (Booth, 1997; Trigwell, 1999). However, others posit that the presence of such a hierarchy is not a requirement for phenomenographic categories (Marton and Booth, 1997; Ashworth and Lucas, 1998; Brew, 2001). Published studies using a phenomenographic approach exemplify the inconsistencies about the importance of hierarchical relationships. Some

authors have assumed a hierarchy is necessary and sought to establish them without question eg. McCune and Entwistle (1999), Shreeve et al. (2004). Some have noted this feature, but not presented such findings eg. Brew (2001). Some have presented findings without addressing the issue at all eg.. Sjostrom and Dahlgren (2002). Others have sought and presented hierarchies, when present, but also presented outcome spaces which do not contain hierarchical relationships eg. Boulton-Lewis et al. (2000a,b).

The categories of description have conventionally been accepted not to refer to variation among individuals but to the range of ways in which people experience, perceive and understand phenomena and aspects of the world and its reality (Marton, 1981; Trigwell, 1997, 1999). The focus is on the group of participants, not on the individuals within the group (Marton 1981; Linder and Marshall, 2003). For this reason, most phenomenographic studies do not indicate how many of the participants or responses contributed to each category of description. The loss of the voice of the individual has been a criticism of phenomenographic research (Bowden, 1996). Some authors have indicated, within the text, whether a large or small number of respondents identified conceptions or experiences which formed certain categories eg. Marton et al. (1993), while others have included numerical values within their outcome spaces eg. Cliff (1998), Pong (1999), Linder and Marshall (2003), although none of these researchers overtly addressed why they had included this information and acted differently from the norm.

The assertion that the categories are not pre-determined but arise from the data collected (Martin et al., 1999) and are dynamic structures dependent on the particular context in which they have been derived (Trigwell, 1997) is not questioned within phenomenography. However, disagreement exists concerning the context-dependency of findings. The contextual dependence of identified categories suggests to some that a wide range of different conceptions and resulting categories could be identified from investigation of the same issue in different contexts (Ashworth and Lucas, 1998). However, the outcomes of research have led others to argue that there are a small number of qualitatively different ways in which particular phenomena are experienced (Marton, 1988a).

Some authors also argue that conceptions of particular phenomena tend to be stable and generalisable across different situations and research participants because they are associated with general human functioning (Marton, 1981; Pong, 1999; Akerlind, 2002). However, others (Trigwell, 1997) claim that, because phenomenographic results are relational, they are context-specific and cannot usually be generalised.

Generalisability

Generalisability is a concern within qualitative research in general and thus also within phenomenography, where it has been little addressed. There is an established pattern of phenomenographic researchers comparing their findings to those of other studies which have investigated the same conceptions or experiences. For example, numerous studies on conceptions

of the nature of learning include comparison of their findings with those of Saljo (1979), the latter having become a yardstick for comparison. The limited consideration of how closely the background of participants in later studies relates to those in earlier studies suggests that there is tacit support for the assertion made by Marton (1981) and Pong (1999) regarding stability of conceptions across people and contexts. This assumption, however, is not actually supported by the literature. While a number of studies on widely researched conceptions like 'learning' have found categories of description which agree with those found in other studies, others have identified only some established and/or other categories of description.

Research into the relationship between understanding and memorisation also indicates that caution is necessary regarding generalisation of study results. The findings from studies in the West were assumed to be universal until studies undertaken in Oriental settings demonstrated that this was not always the case eg. Au and Entwistle (1999), indicating that cultural differences are present. The fact that later studies in the West have also identified conceptions which were originally thought only to be the case in Oriental settings eg. Meyer and Shanahan (2001) suggests that perhaps conceptions are universal. However, a comprehensive body of research needs to be undertaken before such a conclusion can be reached

These outcomes, and the recognition by Marton et al. (1993) and others that categories of description represent the constructs of individual researchers, suggest that, unless close comparisons are made between the background of

participants and the context of studies before generalisations are made, an issue concerning generalisability remains. Against these uncertainties, a position somewhere between those who argue for and against generalisability may be appropriate. Findings are more likely to be generalisable to similar contexts and less so to differing ones, but the basis for this needs to be explored by researchers before conclusions are drawn. This position is supported by a consideration of 'fittingness' proposed by Schofield (1993, cited in McCune 2001). which suggests that people seek to find the extent to which qualitative research findings are relevant to their own context, rather than considering generalisability in general terms, an outcome which is unlikely with small-scale research which is usually context-specific.

The issues relating to generalisability of findings are also relevant to the debate concerning the related area of the extent to which the results of phenomenography, although interesting in themselves, can be used in practice. While some have questioned this (Bowden, 1996), others argue that phenomenography offers information on learning and teaching which can inform educational practice (Marton, 1988b; Prosser, 1993; Bowden, 1996; Dall'Alba, 1996).

Validity and reliability

Although the existence of a large number of studies using phenomenography may suggest a well-established tradition of phenomenographic research, a number of theoretical and practical issues exist, particularly concerning

validity and reliability (Ashworth and Lucas, 1999). Although many agree that these must be maximised, it is not always clear which methods are adequate.

Validity

Entwistle and Entwistle (1992) propose a number of measures to address concerns about validity in phenomenography. They suggest that validity rests partly on a 'test of plausibility' and 'recognised reality' dependent on the reader's own knowledge and experience of the phenomena considered. This argument may have some strength, but is insufficient for a number of reasons. For example, it is subjective and also does not account for those without relevant knowledge and experience. Another of their suggestions, that comparison of findings with similar research is a test of validity. is questionable, particularly when the already identified issues concerning generalisability are considered. Similar research findings may indicate reliability, but need not be valid. Entwistle and Entwistle (1992) recognise that other tests for validity need to be considered. Their suggestion of comparison of qualitative with quantitative findings may have some credibility, but valid qualitative research should be able to stand alone.

In contrast to the processes suggested by Entwistle and Entwistle (1992), Akerlind (2002) proposes the use of two other approaches, communicative validity and pragmatic validity, in phenomenography. She cites numerous authors who accept that the inherent subjectivity within phenomenography implies that more than one interpretation of the same data could occur. In relation to this premise, she argues that the issue of validity revolves around

seeking, not the 'right' interpretation, but one that is defensible. This communicative validity depends on feedback and acceptance from two possible groups, the source of data, interviewees, and the recipients of the findings, including the research community and other possible users. She recognises that there are difficulties associated with seeking interviewee feedback, including the fact that an interviewee will take a personal view while the findings are based on group findings. Pragmatic validity refers to the extent to which findings can be used as an 'educational tool' to inform actual practice. Although the approaches proposed by Akerlind (2002) may have some value, both rely extensively on subjective elements which may do little to improve validity. This possibility further weakens the argument of those who posit that the findings from phenomenographic research can inform educational practice (Marton, 1988b; Prosser, 1993; Bowden, 1996; Dall'Alba, 1996).

In two polemic papers, Saljo (1996; 1997) has raised a number of concerns about some of the core features of phenomenography which have implications for validity. Amongst other things, Saljo (1996) questions whether the different conceptions described by participants refer to actual conceptions or are really different interpretations of the same question. Although this issue is well considered, no real solution is offered, except perhaps that researchers take these factors into account when planning and undertaking research and include discussion of these issues when presenting their findings.

Saljo (1997) expresses concern about what phenomenographic researchers accept the fundamental premise of 'ways of experiencing' to be. In this paper, well supported with examples from the research literature, he argues that the participants' responses in interviews, which inform the resulting categories of description, are widely accepted to be empirical and actual 'ways of experiencing', without recognising that what was said may not, in fact, be what is or was experienced, but an interpreted account. The general concern about the validity of the findings from data collected in interviews in qualitative research (Grbich, 1999; Silverman, 2001) supports consideration of validity within phenomenography. Other authors writing about phenomenography have also identified this as an important issue (Johansson, 1996). Saljo (1997) suggests that accepting that participants' responses are 'attempts at communicating' rather than 'ways of experiencing', and studying the social and cultural factors which inform that communication may be more appropriate. Such a change fundamentally challenges a core aspect of phenomenography, but Saljo does not address the possible consequences.

Saljo (1997) also questions the widespread use of the word 'experience' within phenomenography and argues that what researchers often question participants about is not really experience, but conceptions or perceptions. He cites others who have also recognised that use of this term may be unhelpful and misleading. This second issue may be more a theoretical ontological issue concerning the scope of 'experience' and may be less important in terms of issues of validity in phenomenography than the first issue raised by Saljo (1997) and the one described by Saljo (1996).

Overall, the issues raised around validity support a need for phenomenographic researchers to recognise the reality of what informs the outcomes of their research when interpreting their findings and draw conclusions which are contextualised and indicative rather than absolute.

Reliability

In recognition of the fact that reliability in qualitative research does not lend itself to statistical measurement, alternative concepts have been proposed which are claimed to be equivalent. For example, the term 'rigour' has been suggested by some eg. Wilson (1998), while others support the use of the concept of 'trustworthiness' eg. Daniel and Onwuegbuzie (2002).

The underlying need for reliability in phenomenographic data collection and analysis is supported by several authors (Dall'Alba, 1996). Hasselgren (1996) argues that phenomenography generally lacks a strict methodology, an argument exemplified by the fact that most phenomenographic researchers usually merely briefly and generally state what they do, without including important and necessary detail on methodological issues, including the background and development of interview questions, the impact on the resulting data of the way the interview was conducted, and the basis, rather than just the process, of the data analysis undertaken. Hasselgren (1996) and others (Francis, 1996; Bowden, 1996; Akerlind, 2002) argue that phenomenographic research must be rigourously planned and undertaken

and that this rigour be demonstrated in the research report. This position supports Bassey's (1999) argument for overt use of monitoring procedures in all stages of qualitative research design, implementation and data analysis in order to optimise reliability.

Although some authors have clarified how conceptions differ from categories of description (Marton et al., 1993), justifiable concerns exist regarding what the term 'conception' means in phenomenography and also around the impact of the context in which the conceptions are described and from which the categories of description are identified (Hasselgren, 1996; Bowden, 1996). They argue that, unless researchers convince readers of the existence of identified conceptions by inclusion of detailed descriptions of how they were developed, the conceptions could justifiably be regarded merely as artefacts of little use. Regarding categories of description, Hasselgren (1996) raises issues regarding validity and reliability by asking whether the same results would have been obtained if someone else had undertaken the study or analysed the same data.

In a response to concerns regarding the replicability of categories of description identified by one researcher, Marton (1988a) makes a distinction between the initial finding of the categories of description which, he argues, is a process of discovery and thus unrepeatable, and confirmation of the presence or absence of the categories when reviewed by other researchers. Trigwell (1997) supports this distinction. Sandberg (1996) considers the second part of Marton's argument and argues that, although widely used in

phenomenographic research, inter-judge reliability measures have inherent weaknesses. Cope (2002) questions their use in qualitative research, which does not have a positivist epistemology. At a pragmatic level, it has been argued that agreement could mask the fact that factors like poor question design, poor interviewing technique and interviewer bias (Francis, 1996) could mean that the data recorded and the resulting categories of description may not represent what participants have really experienced (Sandberg, 1996) and, on that basis, apparently reliable results may not fulfil the basic requirement that the categories of description are faithful (Francis, 1996; Sandberg; 1996) to participants' real conceptions. Although not stated explicitly, Johansson(1996) implies that, despite such concerns, if inter-judge reliability is not measured, both the data analysis process and findings are compromised.

As other's (Payne and Payne, 2004; Robotham, 2004) have considered in relation to data obtained in qualitative interviews in general, Webb (1997) identified concerns for the validity and reliability of findings in phenomenography arising from the fact that neither the interviewer nor the interviewee are neutral elements in the process. Sandberg (1996) recognises that the humanity of the interviewer and participants means that subjectivity will always be present. What he proposes as an alternative to improve reliability is 'interpretive awareness'. This approach accepts the subjective nature of phenomenographic research, but aims to minimise the effects via recognition of these issues followed by identification and implementation of overt efforts to reduce these effects throughout the research process.

Sandberg (1996) proposes implementation of 'bracketing' by the researcher as a means of achieving this, an approach also advocated by others (Francis, 1996; Ashworth and Lucas, 1998, 1999).

Developed within the phenomenological tradition (Holloway, 1997; Ashworth and Lucas, 1998), bracketing involves suspending the interviewers existing conceptions, assumptions and expectations in order to enable the interviewer to approach the arising data in a neutral way in order to facilitate achievement of as 'true' a picture of the participants experiences and perceptions as possible. It also has relevance during the analysis and interpretation of data (Sandberg, 1996). The limited or absent consideration of bracketing in the literature on interviewing suggests that it is not a generally accepted method of managing the potential impact of the interviewer's knowledge on the resulting data. However, it has received some specific attention within phenomenographic research.

Referring directly to Husserl's work within phenomenology, Ashworth and Lucas (1998) identify two main areas relevant to bracketing; setting aside existing knowledge and understandings, and not questioning the validity of the experiences or perceptions of the interviewee. They argue that, although the issues which bracketing may address are recognised within phenomenographic research, the centrality of its necessity, and detail on what form this should take within this approach are lacking. Ashworth and Lucas (1998) identify some phenomenographic studies in which no stated effort was made to bracket prior knowledge and research and even identify some

research in which categories of description matching those from existing research were actively sought. In a balanced discourse they accept that implementation of the full scope of what has been proposed to be required in bracketing may limit what phenomenography aims to achieve. For example, they recognise that phenomenographic researchers are unlikely to not have any existing knowledge of the literature on the topic they are investigating or they would not be able to undertake such research. Uljens (1996) also argues that an absence of prior knowledge is not feasible. The practical difficulties involved in setting aside existing knowledge and presuppositions are also considered by Ashworth and Lucas (1998).

However, their overall message that the researcher needs to recognise factors relating to themselves which may interfere with opening the interviewees world, and actively reduce their impact, is clearly presented. This argument is also supported by other literature (Francis, 1996; Ashworth and Lucas, 1999; Akerlind, 2002). Uljens (1996) agrees that open-mindedness on the interviewer's part is important and further argues that prior knowledge in itself does not negate the ability to implement this. Although Uljens provides little justification for this stand, his implication that the researcher is able to be consciously open-minded appears reasonable.

The concept of interpretive awareness appears credible, but Sandberg 1996) provides no evidence for its effect. However, Cope (2002), using descriptions of the process of a phenomenographic study, argues convincingly that

utilisation of interpretive awareness does help foster attainment of the desirable state of trustworthiness proposed by Bassey (1999).

There are other areas of concern. Although considered from the particular perspective of gender representation, the argument by Hazel et al. (1997) that the method of analysis and the descriptions included in the outcomes space in phenomenographic research focus largely on the cognitive domain at the expense of the affective one is also an important one. Their proposal that phenomenographic studies consider both domains and how they interact is convincing. Bowden's (1996) approach of avoiding removing and then considering quotations away from the whole transcript could go some way to achieving this, but inclusion of affective issues within the outcome space remains an issue.

Although some of the issues considered here apply within the broader context of qualitative research, this does not mean that they cannot be addressed within a particular research approach. It is important that they are addressed within phenomenographic research in order to optimise its quality and credibility. Issues concerning the theoretical framework and ontological basis of phenomenography will take time to resolve. However, one consistent practical message emerges from the literature; the necessity to actively take possible confounding factors into account in designing and undertaking research and overtly include them when reporting studies via inclusion of detailed descriptions and balanced interpretations of the findings.

The use of an audit trail has been proposed as a means of achieving this (Robson, 1993; Holloway, 1997; Morse, 1998). An audit trail involves a clear and detailed record of the reasoning, decisions and procedures followed by the researcher before and throughout the research process. The procedure involves:

- Presentation of the rationale for and aims of the research
- Description of the design used and procedures followed
- Record of issues and decisions around ethical issues
- Explanation of the sampling process
- Description of data collection, processing and analysis procedures
- Corroborative excerpts from the data

(Robson, 1993; Holloway, 1997)

While undertaking this process consistently and overtly in a 'systematic and self-conscious' manner has been argued to be important in optimising both validity and reliability (Mays and Pope, 1995), the same authors (Mays and Pope, 2000) also caution that an important factor perhaps not clearly identified in the elements comprising an audit trail is the impact of the relationship between the researcher and the participants The Hawthorne effect is one example of how simply participating in a study can influence subjects' behaviour (Payne and Payne, 2004). The argument that the more intimate and personal nature of much qualitative research has the potential to strongly influence the nature of data collected, with an associated impact on the reliability and validity of the outcomes (Busier and Pigeon, 1999) is true in phenomenography.

Despite the challenges faced, to have quality and value, phenomenographic research must be undertaken and reported in a way which meets the central tenets of reliability and validity. The two primary measures being followed in this study are bracketing and an audit trail.

Longitudinal research

This investigation was longitudinal as it aimed to obtain data relevant to the student's learning experiences for the duration of their degree studies and involved a series of data collection incidents (Menard, 1991). Many of the topics addressed in the study fulfilled the widely accepted characteristic of longitudinal studies, which presumes that such research is used to investigate change, via comparison of data across time (Menard, 1991). However, some topics were only addressed once.

Despite this partial departure from the norms regarding longitudinal research, issues relevant to this type of research still apply. These include participant attrition, conditioning of participants resulting from repeated exposure to data collection, the possibility of 'fading relevancy' of the research and the costs of undertaking several sets of data collection and analysis (Magnusson and Bergman, 1990; Menard, 1991).

Participant attrition is a real issue in a study taking place over four years. I sought a larger number of participants than would have been needed for a

shorter study in order to minimise adverse effects resulting from a fall in numbers over time. Conditioning of participants via a learning effect cannot be avoided because of the inherent nature of a longitudinal study. Although there is the possibility that familiarity with the types of questions being asked and the topic areas being addressed could have a negative effect on the data obtained, it could be argued that such an effect could be positive as familiarity with these could make understanding and answering questions easier.

The fact that the questions being asked at each stage of the study would be relevant to recent learning experiences, making each interview a different experience with a timely focus should address the issue of fading relevancy.

The issue of costs for both researcher and participants is real, but I took a considered decision, in light of the aims of the study and the potential sources of relevant data, that the number and scope of data collection episodes was appropriate, and that the associated costs were worthwhile in terms of the potential resulting benefits.

Interviews

Although phenomenography has used data obtained by other means (Marton, 1988a), the most commonly used method within this approach is the semi-structured interview. Individual rather than group interviews are usually undertaken. Interviews enable the researcher to obtain data on the experiences of participants and their understanding and interpretation of these

experiences (Grbich, 1999) and, thus, fulfil the purposes of the phenomenographic approach.

Interviews can be structured, semi-structured or unstructured (Grbich, 1999), depending on the purposes of the interview and the sort of data to be obtained, and the way questions are written and presented will reflect this (Silverman, 2001). Denscombe (1998) recognises that the fundamental difference between the structured and other types of interview is that, in the latter cases the focus is on 'discovery', enabling the interviewee to talk around the topic, using their own words, and provide more explanatory and detailed data. While unstructured interviews can virtually be conversations and resulting data could be very different between different interviewees, semi-structured interviews involve the use of a set of predetermined questions, the wording of which is open-ended in order to enable respondents to talk about the topic rather than provide a narrow answer (Grbich, 1999). The less rigid nature of the semi-structured format also allows for flexibility in the order in which questions are asked, the time given to each question, and the wording used in questions (Robson, 1993).

As researchers using the phenomenographic approach seek descriptions of people's perceptions and experiences, a semi-structured or unstructured approach is most appropriate. Over time, the semi-structured format has become most commonly used within this approach (Marton and Booth, 1997). Within the concept of the 'semi-structured' interview variation does exist. Although use of open questions is normal, these could range from a few in

number with very general focus to a large number of more focused questions (Robson, 1993).

Validity and reliability

Although the interview is seen as a valuable means of data collection, there are issues around both reliability and validity associated with its use. The flexibility offered in the semi-structured and unstructured formats facilitates achievement of the personal experiences and perceptions sought, but concurrently threatens reliability of the data obtained (Silverman, 2001). Holloway (1997) argues that, despite issues around this flexibility, the structure provided by the interview questions within semi-structured interviews allows the interviewer to ensure that, by the end, the same ground will have been covered. However, she supplies no evidence to support this statement.

Much that threatens the reliability and validity of interviews relates to the interpersonal nature of the interview. Robotham (2004) states that the ideal of the interviewer as an 'inert agent' is unrealistic and that, by simply being present, the interviewer will influence the process and the data obtained. This confirms the experiences identified earlier in a reflection on phenomenographic research (Theman, 1979). The Hawthone effect is possibly the best described consequence of this factor in relation to the interviewee. It is common to both quantitative and qualitative research. However, the latter suffers from the absence of use of control groups, the method used in quantitative research to account for and measure this source of bias (Payne and Payne, 2004). Payne and Payne (2004) describe the

Hawthorne effect as changes in behaviour resulting simply from the fact of being studied. Pope and Mays (1995) give a different definition of the Hawthorne effect, which has additional implications. They define it in relation to the impact of the researcher on the participants, rather than on the broader effect resulting from simply taking part. Payne and Payne's (2004) description of the research processes which led to recognition of this effect suggests that their definition is more accurate. Even if their definition of the Hawthorne effect is questionable, Pope and May's (1995) interpretation recognises the important effects which the researcher can have on subjects' responses. There are several sources of so-called 'interviewer bias' (Holloway, 1997; Payne and Payne, 2004).

Holloway (1997) states that the gender, ethnicity and cultural background of the researcher are possible sources of bias. In addition, she states that the researcher's attitudes and assumptions are subjective elements which can influence the interview and its outcomes. Holloway (1997) and Grbich (1999) warn of the dangers for the reliability and validity of responses if the researcher asks questions in a directed manner or directs responses. Francis (1996) also recognises the risks involved in such leading, but states that, in phenomenographic research, the underlying purpose means that interviewees do need to lead interviewees to comment in relation to the specific context under consideration and not to other contexts. Ashworth and Lucas (1998) agree that direction is needed or no useful data will result. They also suggest that complete bracketing would threaten the claimed non-dualist nature of phenomenography. Francis (1996) states that the researcher needs to be

overt in consideration of the nature of such leading and its possible impact on the outcomes and Ashworth and Lucas (1998) stress the importance of keeping direction or leading to a minimum in order to minimise any negative effect. At one level, such leading is positive as it will hopefully achieve answers with the context-specificity sought. However, other less positive consequences do also need to be addressed.

Payne and Payne (2004) also recognise the potential effects of the researcher's background when they state that the knowledge which the researcher has on the topic under consideration could influence the way in which questions are asked and the interview is conducted. The use of bracketing is one means of addressing the possible impact of such knowledge.

In addition to concerns around interviewer assumptions and expectations, Grbich (1999) raises concerns, in relation to both the interviewer and interviewee, that there is an underlying assumption that the interview and interviewee really understand each other and that there is no interference from language, cultural or social barriers.

Another factor relevant to both participants in an interview relates to the relationship between them. Holloway (1997) states that, if there is insufficient or excess rapport between interview and interviewee, the interview process can be adversely affected. Denscombe (1998) also raises this issue, stating that a good rapport is necessary if interviewees are to feel 'empowered' to

describe their actual experiences or perceptions rather than feel inhibited, and a real dialogue is to take place. However, neither author gives any evidence to support this assertion, and the issue of identifying when rapport is not sufficient is also not addressed. Grbich (1999) argues, correctly, that the responsibility for establishing and maintaining appropriate levels of rapport lies with the interviewer, who needs to be well-prepared, interested, enthusiastic and a good listener. Seidman (1991) and King (1996) both sound an important note of caution regarding the extent of rapport established, arguing that the rapport needs to be controlled and that the interviewer should avoid the development of a 'therapeutic relationship'.

Busier and Pigeon (1999) also consider the nature of this relationship to be crucial and explore the issue in some depth. They suggest that the interviewer-participant relationship could become egalitarian in some cases while being an unbalanced power one in others. They cite numerous authors who have addressed these issues, but assert that this issue has still not been adequately addressed. olloway, 1997)King (1996) argues that the success of the interview relies heavily on trust, particularly of the interviewer by the interviewee, an assertion which supports Busier and Pigeon's (1999) focus on this factor.

Busier and Pigeon based their conclusion regarding trust on a perception that the nature of information which participants were prepared to share demonstrated such a situation. The subjective nature of this assertion could be criticised, but it also demonstrates the difficulties in measuring the effects

of the relative positions of power between the researcher and the participants. Busier and Pigeon (1999) argue that, whatever form it takes, the nature and effects of the researcher–participant relationship must be openly addressed in order to identify its potential effects on the outcomes, particularly if the interview questions are context-based. In educational research, the interviewer may or may not be one of the students' tutors. If they are not, then power relationships may be less of an issue. However, the familiarity with the educational context which a tutor has may be important to the quality of the data collected (Rabbitt, 2003).

Linked to the issues relating to bias and the nature of the researcher-participant relationship is concern about the perceived assumption that interviewee responses will contain the truth of their experiences and understandings (Grbich, 1999; Saljo, 1996). Silverman (2001) agrees and discusses the implications of the fact that interviews do not act as 'passive filters' towards the truth, but that both participants 'actively construct' a version of the world relative to the context of the interview. This may be additionally affected by a reluctance on the part of the interviewee, even in a trustful environment, to metaphorically expose themselves when the subject is very personal (King, 1996; Grbich, 1999; Silverman, 2001).

The inherent artificiality of the interview and the possibility of an interviewee's desire to tell the interviewer what they think s(he) wants to hear are also problematic issues which should be taken into consideration (King, 1996; Grbich,1999; Silverman, 2001; Robotham, 2004). The latter factor is of

particular relevance if the researcher does ultimately have some sort of power over the participants, even it this is outside the interview situation, for example as a tutor. In addition, Robotham (2004) identifies that validity can also be challenged if the interviewer assumes that a participant's responses to questions relating to a particular experience could not have been influenced by other similar experiences.

In light of all these potential or actual confounding variables, Robotham (2004) appropriately cautions that the data collection process itself ie. the interview, may have an impact on the findings which limits their applicability to other contexts or interview outcomes. He specifically identifies the phenomenographic approach as assuming that all interviewees interpret the questions in the same way. He provides no evidence for this, however, and also does not recognise that this is an issue which would be true in other qualitative research approaches which utilise interviews.

Fleming (1986) has also raised concerns, within phenomenography, regarding the impact of the interpersonal and contextual issues around interviews on interpretation of the resulting findings. He argues that there is a tendency for researchers to go beyond identifying the experiences described and drawing inferences regarding behaviours in other contexts. Fleming describes interviews as 'social settings' in which student responses are influenced by that setting and that their responses to questions on the same topic in another setting could be different. In light of this, he argues that interpreting the outcomes of interviews as the truth or 'analytically transparent'

and assuming that statements made actually refer to the reality of learning is problematic.

Fleming's case is well-argued, with the inclusion of a number of examples from published phenomenographic research. However, although he does consider methods which could potentially increase validity, like triangulation, he recognises the inherent problems within these and does not offer any specific means of addressing the issue. Perhaps, the overall message is that researchers need to be mindful of the influences of the nature of the interview on the findings and be circumspect in their interpretation of their meaning and generalisability to other contexts. This conclusion also supports the issues arising from Francis's (1996) discussion on the use of leading within phenoemographic interviews.

Interviewing skills

At a technical level, Seidman (1991) and Denscombe (1998) list the following as characteristics of good interviewing skills:

- Being attentive
- Being sensitive to the feelings of the interviewee
- Being able to manage silences and know when to give respondents time to think
- Being able to follow-up, but not interrupt
- Being able to prompt the interviewee when appropriate
- Being able to probe in a constructive way

- Being able to check by summarising what the interviewer understands the interviewee to have said and seeking confirmation or clarification

Denscombe (1998) recognises that some of these skills rely on intuition, and included no supporting evidence to support the points made. However, the processes outlined above appear appropriate and may play a role in helping to optimise the quality of information given by interviewees.

Data recording

This central aspect of research also presents challenges to the nature and quality of the data collected. The common way of recording data arising from interviews is the tape recorder (Denscombe, 1998) and it is the method commonly used in phenomenographic research. This method has both advantages and disadvantages. It provides a verbatim record of the verbal aspects of the interview, but is unable to identify non-verbal elements. Denscombe (1998) argues that its mere presence can also have an inhibitory impact on the interview, although he provides no evidence to support this assertion. Other methods like video recording have been proposed (Denscombe, 1998), but these may be even more intrusive than the tape recorder and may still not be able to capture all non-verbal elements (Grbich, 1999; Silverman, 2001). Writing notes challenges both the reliability and validity of the data recorded as the record is unlikely to be a verbatim one (Silverman, 2001) and the fact that it reduces the amount of eye contact possible may also interfere with the quality of the interview (Grbich, 1999).

In summary, despite its widespread use in qualitative research, the interview inherently has problems which potentially threaten the reliability and validity of the information sought. The literature correctly suggests that it is important that these confounding variables be identified, efforts be made to reduce them as far as possible, and their impact on the findings be overtly addressed.

Chapter summary

The widespread use of phenomenography in research into student learning supports use of this approach in the study. As is the case in qualitative research in general, phenomenography faces challenges and debate concerning validity and reliability. Two related measures were used in the study to address these concerns: an audit trail involving inclusion of detailed information on all aspects of the study design, implementation, data analysis and interpretation of the findings, and bracketing to minimise researcher influence and bias. In the following chapter the method used in the study is presented.

Chapter 4

Method

Sampling, ethical considerations, interview questions, data collection and data analysis procedures are presented in this chapter. In the final section, the content and format of presentation of the results are described. In addition to the influence of interpersonal factors and issues of inherent subjectivity when undertaking qualitative research, my role as an 'insider-researcher' also had the potential to shape processes during the study, and the resulting outcomes (Rabbitt, 2003; Mitchell, 2007). This issue applied particularly to several elements of the research: participant recruitment, data collection and data analysis. My responses were evidenced either in practical actions eg. during recruitment and/or in my academic behaviours eg. data analysis. These actions are addressed in the relevant sections of this chapter.

Sample

I used a purposive sampling approach in the study, a method widely used in qualitative research (Coyne, 1997; Frankel and Devers, 2000c). The justification for this was to obtain data from students from a wide range of academic and experiential backgrounds in order to optimise the opportunities of the study identifying data which was inclusive for the cohort being investigated (Coyne, 1997). This approach is supported by Payne and Payne (2004) who state that, in qualitative research, generalisability of findings to a larger population and explaining wider processes is less important than

participants being selected more for being different and interesting. Robson (1993) and Silverman (2001) further reinforce this argument by stating that purposive sampling allows the researcher to meet the purposes of an investigation by seeking participants with certain characteristics. In addition, within the phenomenographic tradition, selecting subjects with differences is appropriate, as the approach seeks to identify variation (Trigwell, 1999).

I decided to follow one cohort of students through the four years of their studies. I did consider investigating students from a number of cohorts. However, the aims of the study indicated that it would be logical to follow one cohort over time rather than obtain more incomplete data from a number of cohorts. I also believed that there would be sufficient variation within one cohort to meet the aims of the study. In addition, undertaking the study on one group was more feasible logistically.

There were 24 students in the 2000 cohort. No maximum number of subjects was sought; the focus was on diversity. However, I anticipated that a minimum of 12 participants would be needed in order to capture the variation in students' backgrounds and also to allow for possible attrition in numbers associated with the longitudinal nature of the study.

Use of a purposive sampling approach implies potential use of a level of encouragement to participate greater than may be the case for other sampling approaches. I also needed to bear in mind that I was one of the students' tutors and that they could feel obliged to agree to participate, particularly if

they were approached individually. Steps were taken to minimise these difficulties. Firstly, in order to give the students some insight into the nature of the topics and questions which they would be asked about if they participated in the study, I distributed a brief questionnaire among the whole cohort (Appendix 1). The responses to this questionnaire were not analysed.

I also explained to the students the background and nature of the study, including its longitudinal nature, the use of individual interviews which would be tape recorded (Silverman, 2001; Payne and Payne, 2004), and the possible length of each interview. A number of assurances also needed to be given to the students to enable them to make an informed decision regarding participation. I assured them of confidentiality and anonymity during data collection, processing, reporting and dissemination. I also explained that participants would be asked to read and sign a consent form and outlined its purpose and content.

I also raised possible issues concerning the differing status between the students and myself and assured them that participation or non-participation would have no effect on their educational experiences or assessment outcomes and that, if they participated, the same would hold true irrespective of what was said during the interviews. My reasons for identifying this issue overtly were twofold. Firstly, it was a central ethical issue. Secondly, I hoped that identifying this issue would help address problems relating to this in the interviews. I also assured the students of their freedom to withdraw from the study at any time, without any consequences.

Lastly, I explained that volunteers to participate in the study would first be sought and that, depending on the number and backgrounds of the volunteers, others may be approached individually to invite their participation. I emphasised that there would not be any coercion to agree to participate.

The students were invited to ask any other questions they had concerning participation in the study. They were then asked to inform me in person by a certain date if they wished to volunteer to take part in the investigation. Using a volunteering approach first was deliberate as I felt that this would optimise motivation to participate in the study over time. Thirteen students volunteered initially. On reviewing their backgrounds I felt that they did not represent the full range present in the cohort. I then approached other students who would help meet that purpose, individually. Of these, four agreed to take part, making the sample size seventeen. This was a larger number than had been anticipated, but I decided that this number could be accommodated logistically and that the more participants there were, the richer the resulting data would be.

Of the seventeen participants, fourteen were female and three male. Their ages on entry to the programme ranged from 19 to 51 years, with a mean of 29 years. Two were under the age of 21 at the start of their studies. Their academic entry routes were as follows: A levels – 4, Access course – 4, degree – 5, BTech/ITEC diploma – 2, NVQ Level 3 – 1 and overseas physiotherapy diploma – 1.

With one exception, all the participants were employed in the NHS either as physiotherapy or rehabilitation assistants. The other student worked as an assistant in an independent hospital. They all continued their employment throughout the four years of the programme and the study.

Ethical considerations

The educational institution where the research was undertaken had no formal ethics structures or systems regarding research. At the time the study began, no formal ethical procedures were in place at the Institute of Education.

The design of the study, recruitment of participants, conduct of data collection, and management of the data were informed by the information provided by Grbich (1999) and by my experience with undertaking and supervising research. The basic premise was that of informed consent which clearly demonstrated protection of the participants. It was subsequently confirmed that the ethical procedures followed in the study met the guidelines and requirements of the Institute of Education Doctoral School, the British Educational Research Association and the Research Governance Framework for Health and Social Care (Department of Health, 2001). I obtained agreement to approach the students from the programme leader, who also reviewed and agreed the information provided in the covering letter and consent form.

Those who agreed to take part in the study were given an information letter confirming the purpose of the study, and the nature, process and conditions of participation. These conditions included assurance of confidentiality, anonymity, entitlement to withdraw at any time without explanation and a 'no detriment to progression through the programme' statement (Appendix 2). Before the first interview began, the participants returned one copy of the signed consent form (Appendix 3), confirming that they understood all these conditions, and also agreeing that the interviews be tape-recorded. I restated the conditions of participation again at the start of each subsequent interview. In addition to fulfilling ethical requirements, I also hoped that repetition of the conditions of participation would help reduce any inhibitions felt concerning being interviewed by a tutor.

Interview questions

Five sets of questions were used during the study (Appendix 4). The questions in all the interviews addressed relevant aspects of a number of areas which the literature had identified as influencing student learning and their learning outcomes. These were: motivational issues relevant at that stage of the programme (Biggs, 2003), programme design and delivery (Prosser and Trigwell, 1999; Biggs, 2003; Ramsden, 2003), study and assessment undertaken in the preceding time period (Prosser and Trigwell, 1999), clinical practice (academic and employment) undertaken in the preceding time period (Wilss et al., 1999), and the conceptions held by participants, at the time of each interview, concerning learning (Prosser and

Trigwell, 1999), understanding (Entwistle and Entwistle, 2001) and memorisation (Meyer, 2000).

The strong relationship between motivation and academic performance and success in mature students identified in the literature, eg. Young (1990), Richardson (1994, 1995), Wilkinson et al. (2004), justified inclusion of questioning concerning general motivation, and the argument by Bruinsma (2004) that the dynamic nature of motivation and its sensitivity to a range of factors justified its inclusion at each stage of the study.

Specific elements with a potential influence on motivation were also included at different stages in the study. In the first set of interviews, participants were asked two questions concerning what influences their prior formal learning experiences had had on their learning during the first year of the physiotherapy programme (Appendix 4). The reason for asking these questions was an expectation that, any difficulties identified, possibly associated with having a weaker academic background (Warwick, 1999a,b), could potentially challenge student motivation and learning.

Wilss et al. (1999) described learning from life experience as 'informal learning' in contrast to the formal learning associated with dedicated learning experiences. The obvious link between students' employment experiences and their learning experience on the programme made inclusion of this area in this study imperative. The interaction between informal and formal learning

experiences identified by Wilss et al. served to strengthen the need to investigate this relationship in the study.

In the same way that students' clinical experience could influence their learning, the learning they achieved as students could influence their ongoing roles as physiotherapy or rehabilitation assistants. There were implications for this dual role which made the latter variation important in relation to their learning and justified its consideration in the study.

Over time, and particularly after clinical placements, the students were increasingly developing knowledge and skills beyond what would normally be required in their assistant role. The way in which this was managed and the nature of their working experiences could potentially have positive or negative effects on their motivation which, in turn, could influence their learning. There was the possibility that the students' new learning could be incorporated into their role, to an agreed extent and with mutual agreement. This would both benefit the service and enable the students to consolidate their learning, a valuable opportunity which other students did not have.

In order to reflect their ongoing employment throughout the programme and to identify any temporal changes associated with their cumulative increase in knowledge and skills, a question was asked, at each interview, on the interaction between the participants' learning and their role at work.

A wide-ranging literature exists concerning students' conceptions of learning, understanding and memorisation. However, the presence of some contradictions and inconsistencies across research findings, and limited evidence from non-traditional student groups justified inclusion of questions on these topics in the study. In addition, despite claims that change can occur over time (Entwistle, 1997) there is a dearth of longitudinal data on these issues in the literature and the longitudinal design of the study provided an opportunity to address this issue. These conceptions were addressed in each set of interviews.

Four areas concerning curriculum and student learning were addressed at different times in the study. The educational approach used on the physiotherapy programme conceptualised the role of the tutor as that of a facilitator of learning, rather than the source of knowledge. This approach is based on research which posits that student-centred teaching is more likely to achieve desirable deep approaches to learning and higher quality learning outcomes than a teacher-centred approach (Ramsden, 1994; Watkins, 1998). As this role may be different from that experienced previously by students, the philosophy was explained at interview and developed during the induction week. In addition, a transition stage at the start of the programme included some structured teaching. Even so, this was not didactic and student interaction and activity during classes was sought from the start. The purpose of this transition was to introduce students to possibly new 'languages' and discourses and to enable them to develop a feel for the level of detail they needed to cover in the future.

The relationship between actual learning and students' perceptions of their learning in different learning environments can be complex. For example, Lake (2001) compared the outcomes of a physiology course delivered in two different ways. One group received standard lectures while the other learned using an 'active learning' approach which involved them being active participants in the learning process. Analysis of assessment results and student feedback identified that, while assessment achievement was higher in the active learning group, students in this group felt that they had learned less and rated the tutors poorly as it was felt that they had not taught them anything.

As a discrepancy between participants' desires regarding the role of their tutors and the reality of that role could adversely affect their learning (Ramsden, 2003), a question on this was asked in the first set of interviews in order to ascertain how closely the participants' desires in this regard matched the role undertaken by the tutors on the programme (Prosser and Trigwell, 1999; Biggs, 2003).

Learning on clinical placement could be argued to be the most important element of a vocational healthcare programme because it is the learning environment which most closely resembles the workplace and the realities of clinical practice. For this reason, participants were asked, in their final interview, to consider their clinical placements as a whole and identify which

elements had been positive and negative influences in relation to their learning.

Research has identified that curriculum design and the educational experiences of students influence both the nature and quality of learning achieved (Prosser and Trigwell, 1999, van der Hulst and Jansen, 2002; Biggs, 2003; Ramsden, 2003). In Interviews 4 and 5, participants were asked 'What aspects of the course have influenced the way you study?'. It was asked to ascertain whether participants' learning behaviours reflected what the curriculum philosophy and design were aiming to achieve ie. those needed for evidence-based practice, continuing professional development and lifelong learning.

The question on measures to improve the programme was related to the one addressed above and was asked after it at both interviews. The programme philosophy was to optimise the quality of student learning and its design aimed to reflect this. However, there is always potentially room for improvement, particularly in such a complex system, so participants' feedback was sought in this regard.

Half of the college-based time in Level 3 study (mid Year 3 to mid Year 4) was devoted to the students' research activity. This substantial amount of time allocation and the fact that this module formed the 'honours' part of the degree justified its specific investigation.

The question on intentions concerning the research activity was asked in order to identify participants' motivations and attitudes towards the research activity. Motivation can have a direct effect on the nature and extent of effort (Biggs, 2003) and even students with high general levels of motivation could find the challenge of this large and academically most demanding part of the programme such that their motivation was adversely affected. The questions about which aspects of the research activity best and least facilitated learning sought to identify which factors affected the participants' progress, in order to be able to potentially reduce the impact of any negative influences. Finally, the participants were asked to consider what they had learned overall from the process.

As assessment drives learning (Biggs, 2003), this topic was addressed in all the interviews. Three areas relating directly to college-based summative assessment were addressed in the study. Motivations with regard to preparing for and undertaking assessment in general were explored in the first two sets of interviews. These issues were not addressed in later interviews as, except for the research activity and the open book examination, participants had undertaken all of the different formats used on the programme. It is possible that other factors, like workload, may have produced different responses later on in the programme, but it seemed more appropriate to focus on procedural issues.

The other two topics covered in this section both investigated procedural characteristics. After the question about intentions, participants were asked in

the first two interviews what they had actually done for particular assessment formats experienced in the relevant time period. As the assessments undertaken in the later part of the programme tended to involve similar processes to those the participants had experienced earlier, the question asked in the other three interviews referred to what they had learned from undertaking previous assessments.

In the third, fourth and final set of interviews, questions on this topic were asked in relation to assessment formats which participants had experienced in the time period since the last interviews. Six formats were considered in total. As some of the assessments involved group work, participants were also asked to talk about their experiences of working for assessment with others, rather than individually.

Participants' thoughts on the influence of grades and feedback on their intentions and actions when preparing for assessment were investigated at Stage 3, when they were coming towards the end of their second year of study and had completed a number of assessment activities. The incentive to explore this area arose from awareness of literature which posited that these factors have an effect on learning (McCune, 2004; Chanock, 2000). Elton (1988) asserts strongly that assessment grades are the 'currency of campus' with achievement of high grades equating to being able to earn a large salary in the workplace, an argument which further justified investigation of their importance and influence. The provision of feedback, not just a mark or grade from tutors, has been argued to be both educationally sound and a student's

right (Ramsden, 2003). Its purpose is to provide information on progress, not just for current awareness, but also developmentally for future use (James, 2000; Yorke, 2003).

Although some questions were relevant only to one set of interviews, most aimed at identifying and exploring change over time. Most of this change was considered at a group level. However, the findings particularly concerning the conceptions of learning, understanding and memorisation were considered at both the individual and group levels.

Although the questions tended to be focused in terms of the area they addressed, their wording was open in style to encourage the participants to talk around the topics raised (Payne and Payne, 2004).

Procedure

Pilot interview

There were a number of reasons why I undertook a pilot interview before the first set of interviews. It allowed for testing of the tape-recording procedure, enabled estimation of how long the interviews were likely to take, provided a 'dry run' on the experience of being an interviewer, and enabled me to obtain feedback from the interviewee concerning the number and clarity of wording of the questions (Bowden, 1996), pace and clarity of my talking, suitability of time given to answer questions, and feedback concerning my body language. The person who was interviewed was a new member of the teaching staff who had some, but limited, knowledge of the vocabulary used in educational

literature and would be able to experience the interview from a similar perspective to a student.

Very useful feedback was obtained from the pilot interview. The main issue was that the way I asked the questions was too 'technical'. My wording tended to reflect the wording on the question sheet so, in order to address this, the questions were re-written in simpler language before the interviews started. The amended questions were reviewed by the pilot interviewee, who felt the wording was much improved.

Undertaking the pilot interview also made me feel more confident regarding my body language, speed and clarity of talking, and pacing of the interview. The pilot interview also identified that the number of planned questions could be covered within the anticipated interview length.

Data collection

Five sets of one-to-one, semi-structured interviews were undertaken as participants progressed through the four years of the programme. I decided on this number as it reflected both the overall structure and phases of activities within the programme. Their timing was determined by when the participants had experienced several different aspects of the programme and there was useful experience to discuss. The interviews also took place at intervals which coincided with times when the participants were college-based for several weeks so that all participants could be interviewed during a similar

time period, in order to optimise similarity in the recency of participants' memory of activities.

One interview took place in Years 1, 3 and 4, and two were undertaken in Year 2. They took place in March/April 2001 (just over half way into Year 1), November/December 2001 (early in Year 2), April/May 2002 (the latter part of Year 2), February to May 2003 (second half of Year 3) and April to June 2004 (latter part of Year 4). The intention of completing each set of interviews in a limited time period was challenged to some extent as participants only attended college on a maximum of two days per week. Particularly in the last two sets of interviews, the timescales were extended further by virtue of greater use of self-directed study time when participants did not have to attend college, and the timing of clinical placements.

Most interviews took place either before or after classes on college attendance days and occasionally during the lunch break, if other times were not suitable for participants. An hour was scheduled for each interview. A timetable was compiled and displayed on the student notice board some time before they were scheduled to begin and participants were informed that it had been put up. If only a few had signed up by about a week before the interviews were scheduled to begin, one general reminder of the list was given to the cohort. No other pressure was applied.

The interviews took place in the same tutorial room throughout the study. A tutorial room was chosen in order to avoid interruptions by telephones or staff

needing equipment. A 'please do not disturb' sign was hung on the door to avoid interruptions and this proved to be effective. The room was one used for the physiotherapy programme so ensuring its availability was simple and physical access easy for both participants and me. The same tape-recorder was used throughout the study and the room set up in the same way each time. Each interview was recorded on a new cassette. The insensitivity of the microphone in the tape recorder required that it be placed close to both people. This meant that a table separated the interviewer and interviewee. Such an arrangement is not ideal, as it tends to create a barrier which can inhibit interaction. However, this could not be avoided.

At the start of each interview I reminded the student that they were free to withdraw from the study at any time, did not have to answer questions if they did not want to, and were welcome to ask for repetition or clarification of questions, if necessary. Assurances regarding confidentiality and anonymity were also repeated. The interview schedule for each set of interviews was followed and all those who participated in each stage were asked the same questions.

Throughout all the interviews, I consciously bracketed my existing knowledge of relevant literature (Francis, 1998; Ashworth and Lucas, 1998, 1999). Sometimes, I found that I was making mental links between something a participant had said and something relevant in the literature. However, I did not voice these and consciously focused on what the interviewee was saying. I also needed to avoid influencing participants' responses by virtue of my

knowledge of the programme which formed the basis for the research (Mitchell, 2007). The knowledge I had provided a useful common point for the dialogue which took place in the interviews (Rabbitt, 2003). However, there was a risk that this knowledge could challenge my neutrality. In reality, I did not find this to be the case, as I realised that the perspective I had on the programme derived from my role as a tutor, while the participants' experienced it as students. Although there was an interface between these two roles in the teaching-learning experience, I found that the fact that I did not have experience as a learner on the programme enabled me to distance myself appropriately.

At the end of each interview each tape was labeled. The only detail used to do this was the interview stage eg. Stage 2 interviews were identified as I2, and a numerical code added to identify the student eg. S3. The numbering was consecutive and reflected the order of interviewing, not a code identifying individual participants. This was the only information available to those transcribing the tapes and was the identifier used on the transcripts. The longitudinal nature of the study allowed for the responses of each student to be considered over time. In order to do this, it was necessary to be able to identify the interviewee for each interview. To this end, I kept a list of the order in which the participants had been interviewed at each stage. This was stored in a place to which only I had access.

Diary

A research diary was kept throughout the full period of the study (Rhedding-Jones, 1997). Grbich (1999) identifies the value of a research diary as an important means of reflective critical self-assessment by the interviewer regarding issues like their performance and the presence of any biases. Apart from being a monitoring procedure, the research diary can also contribute to the research report.

As an internal rather than external reflector, I did not anticipate that the diary would be either a continuous or a detailed reflection. I used it as an opportunity to reflect on issues which I felt I wanted to record in writing. Thus, its utilisation was intermittent, with use being greatest towards the start of the study (Appendix 5). On review, it appears to be a record of events rather than day-to-day activity. However, what I did record proved useful both in undertaking the data collection and analysis, and writing the research report.

Data analysis

Interview data can be analysed directly from the tapes (Silverman, 2001). However, as is usual in phenomenography, all the interview tapes were transcribed verbatim, and analysis undertaken using the printed hard copies. I analysed the transcriptions for each of the five stages of the study separately from those from the other stages. Analysis was undertaken after transcription of all the interviews from one set of interviews was completed, rather than as they became available, in order to achieve immersion in the data and obtain a 'feel' for the participants responses at that particular stage. This approach

also enabled me to recognise any patterns in the data, a process which would have been much more difficult if analysis had been undertaken on a more piecemeal basis. Analysis was undertaken on all the transcripts from each stage rather than the approach used by some other researchers of undertaking a preliminary analysis on a sample of transcripts (Akerlind, 2002).

In order to enable longitudinal analysis, a random list of the participants was made and coded numerically. After each set of interviews had been transcribed I coded each transcript accordingly, creating a time line which enabled individual participant's responses to be tracked. The list with the student names and their numbers was locked away. This process identified which data came from the same participants, but maintained their anonymity.

Analysis of the transcripts could have been undertaken either manually or electronically. Experimentation with both formats resulted in a decision to undertake the analysis manually, largely because I felt it would be easier to return to different parts of the interview data if they were in hard copy format.

Phenomenograpchic analysis

A phenomenographic analysis following the staged, iterative method described by Marton (1988a) and others was used, and categories of description were identified for the different areas covered in each set of interviews. Although many of the published studies which have used this approach have considered only one topic, others have used a series of

phenomenographic analyses for different parts of the same study (Newton et al., 1998), as I did.

The data analysis process described by Marton (1988a), Entwistle and Entwistle (1992) and Trigwell (1997) involves the following process:

1. Based on the question under consideration, responses relevant to this are identified and marked. Marton (1988a) emphasises the importance of the responses being considered in relation to their context and not just to the words themselves. The selected quotations form the basis of the next step and the analysis moves away from the individuals who spoke them, to the meanings embedded within the quotations.
2. An often lengthy iterative sorting procedure then follows, during which different meanings among the quotations are identified and subgroups of quotations with similar meanings are formed, which separate them from those with other meanings. Marton (1981) and Booth (1997) both state that the end of this iterative process is reached when a stable system has emerged in which all quotations have been correctly allocated to clearly defined groups which identify all the conceptions identified within the data.
3. The sub-groups then form the categories of description and the quotations which formed the categories are the means of illustrating them

The procedure I followed in the study is described in detail below. I particularly bore in mind the responsibility I had regarding the reliability and validity of the results as I was to be the sole analyst and no other source of

monitoring these was included. As I had done in the interviews, I needed to avoid the analysis, including my interpretation of the data, being influenced by what I already knew from the literature (Ashworth and Lucas, 1998). Although I was aware when responses agreed or differed from those found in other studies, I consciously put those thoughts to the back of my mind and considered the full range of data in its own right. Only after the final sets of categories of description had been identified did I then refer back to the literature and make conscious comparisons and interpretations. Achieving such neutrality can be challenging (Ashworth and Lucas, 1998; Rabbitt, 2003). However, as noted in the diary (Appendix 5) I found the process of 'losing' the individual participants during the analysis to be difficult, but did not identify challenges regarding neutrality while undertaking the data analysis. It is also possible that maintaining an open mind during the study was facilitated by my genuine interest in finding out about the participants' experiences.

I initially read each transcript through in full. During the second reading I used a manual coding system to identify all relevant responses to each of the questions. In identifying responses, the importance emphasised by Marton (1988a) of the responses being considered in relation to their context and not just to the words themselves was borne in mind. The relevant data, which would form possible representative quotations, was underlined and numerically coded in the margin using different coloured pens and a unique numerical symbol in order to be able to identify to which question they pertained. I recorded this coding on a copy of the relevant interview schedule

to enable easy access to relevant parts of the transcripts on subsequent occasions.

Normally, phenomenographic researchers have then extracted quotations directly from transcripts and used these to inform initial decisions on categories of description (Akerlind, 2002). I undertook the second stage of the analysis slightly differently. Rather than extracting quotations, for each topic area in all the transcripts for that interview, I read through the coded information again and identified provisional categories of description for each response, noting to which transcript each category was relevant. As I worked through the transcripts for each stage, those with responses which appeared to belong to categories already identified were noted and any data which did not fit into any of the existing categories was given a provisional category of its own. The outcome of this process was a series of proposed categories of description labelled with those transcripts which contained relevant responses, enabling easy access to the applicable transcripts. In her review of the processes followed in phenomenographic research, Akerlind (2002) stated that variation exists, during the iterative process, in the order in which quotations are utilised and categories of description are identified. Although she did not cite any examples in support, this recognition supports the approach I took.

The wording of the provisional categories of description for each topic area was then scrutinised. Any which seemed to not be distinct from the others were noted. I then returned to the transcripts and re-read the quotations

which had informed the categories of description in order to confirm whether the category title did reflect the participants' responses, and to decide on which categories were to form the final outcome space. Reaching this end was an iterative process which often involved referring to a number of transcripts on more than one occasion. Following this procedure was an important part of optimising the reliability and validity of the final categories of description, particularly as no one else was to be involved in confirming the outcomes of the analysis.

Once the final categories of description had been decided, I returned again to the transcripts and typed out quotations from each relevant interview stage which, by the end, captured the full range of responses which formed each category. Although it would have been possible to extract quotations in the earlier parts of this stage of the analysis, the large number of transcripts and their length meant it was easier to focus on the categories of description rather than the quotations. From a reliability and validity perspective, recording the quotations after identifying the categories of description provided a further opportunity to evaluate the exclusiveness of each category and confirm its scope. Even at this late stage, the category membership of some responses needed reconsideration. I then reviewed the quotations identified for each category and reduced the number until the point at which further removal would have meant that the quotations retained would not have evidenced the full scope of that category.

The presence of hierarchical relationships among the categories of description has been argued to be a key feature of the outcomes of phenomenographic analysis (Trigwell, 1997). However, Akerlind (2002) recognised that views on the necessity for this vary within phenomenographic research. Ashworth and Lucas (1998) have concerns that seeking a hierarchical relationship can lead to distortion of the data with the search for structure overriding the full scope and richness of data present. In light of these issues, the issue of hierarchy within the outcome space for each topic was only addressed after the final categories of description and their representative quotations had been confirmed. The categories within each outcome space were scrutinised for the presence of hierarchical relationships. If these were present, I amended the order of presentation of the categories of description to reflect this.

As this was an exploratory study and the full range of student experiences and perceptions was being sought, all responses were included in the results. This approach is in contrast to some studies where investigations into topics which have produced hierarchically related outcome spaces have included only the highest level of conception identified by each respondent eg. Marton et al. (1993). This means that outcome spaces could contain more categories of description than there are participants (Marton et al. (1993).

Results presented

The large number of questions covered in each interviews required selection of what was included and presented in this report, and also how to present

these as economically as possible. Results on all the main topics covered in the study are included. However, responses to all the questions asked are not. Some exclusion was necessary due to length constraints. All of the questions asked were relevant to the aims of the study, but the results of a few questions, the outcomes of which appeared to have the smallest perceived impact on the overall findings, were excluded from the report.

Numerous questions on what participants learned from their several assessment experiences were asked. The categories of description for these have been collected and presented together, rather than separately.

As stated earlier, data analysis was undertaken by stage. After all the analysis was complete it was apparent that there was much commonality in the categories of description for topics which had been investigated longitudinally on two or more occasions. For this reason, these findings were combined and are presented as single units, with the single set of representative quotations coming from all relevant interview transcripts.

Normally, only the categories of description arising from phenomenographic analysis are presented (Marton, 1981; Trigwell, 1997; 1999), without indication of how many responses informed each category. The rationale behind this is that phenomenography focuses on the variation within a group, not on the individuals within that group (Marton, 1981; Linder and Marshall, 2003). Although involving a move away from this theoretical detachment which is widely accepted within phenomenographic research, not including

data on the number of responses within the categories of description would not enable two of the purposes of the study to be met. Firstly, it would not provide information on the number of participants who identified issues. Knowing the strength of feeling was important when evaluating the design and delivery areas of the programme. Secondly, although it may be possible to follow temporal changes in behaviour and thinking across the group, being able to also do so for individual participants was likely to provide a fuller picture.

In light of these issues, and the presence of precedents in the phenomenographic literature to include numerical data within the results (Cliff, 1998; Pong, 1999; Boulton-Lewis, 20001; Linder and Marshall, 2003), the number of participants with responses in each category of description was included in the results tables presented in the following four chapters. Appendix 6 contains two further tables for each outcome space. The representative quotations for the categories in each outcome space are presented in the equivalently numbered 'b' table. For convenience, where necessary, exemplar quotations from the 'b' tables have been included in the main text. For the purposes of identifying temporal change, the anonymous coded identifiers for the participants are detailed in 'c' tables for each outcome space. In the text, references to tables in Appendix 6 are accompanied by the relevant page number. In all the tables, the number of participants interviewed at each stage is included in brackets after the interview number.

The results have been grouped into four areas – motivational factors and approaches to learning, conceptual perceptions, and two aspects relating to the learning context – curriculum and assessment experiences. The results and discussion of the results of the study are presented in the following four chapters, each covering one area.

Chapter 5

Results and discussion

Motivational factors

Three elements which address the research question concerning motivation are considered in this chapter. The first addresses student motivation in general. The second considers two factors relating to students' prior experiences which could impact on their motivation: the influence of their prior academic experiences on their learning, and the impact of their prior clinical experience on their learning on clinical placements. The final element explores the interactions and influences between their learning and their ongoing roles as assistants. This topic also addresses the third research question.

General motivational factors

The representative quotations for each of the categories of description which emerged from the data are presented in Table 5.1b (Appendix 6 p. 286). Table 5.1a lists the categories of description and the number of responses. Some categories refer to positive aspects of motivation and others to negative ones. It is important to note that there were some differences in the questions asked at different stages of the study. For Interview 1, students were asked why they had decided to undertake the programme. This explains the absence of any negative responses. For Interviews 2 – 4, however, the

questions focussed on their motivation at that stage of the programme. This allowed for negative as well as positive responses. The responses for Interview 5 reflected an overview of both positive and negative influences on their motivation across the programme as a whole.

Table 5.1a General motivational factors

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Positive					
Intrinsic (deep approach)					
Subject interest	15			1	4
Qualification aspiration	8	9	10	7	10
Learning achieved		5	5		5
Career / academic aspirations	9				1
Course experiences					1
Placement experiences			5		3
Course familiarity				1	
Extrinsic (surface approach)					
External support and expectations	7	3	1		6
Progress made		6	14	13	
Negative					
High workload		5	2		4
Curriculum design			1	2	2
Self-directed study				1	
Placement experiences			2		
Temporal factors		1			
External pressures			1		5
Employment issues					2

Because of the established use of the concepts of intrinsic and extrinsic motivation (Marton and Saljo, 1997; Ryan and Deci, 2000), I further analysed the outcome space in order to identify whether the categories of description could also be grouped using this classification. This task was made difficult

by the debate which exists concerning the definitions and descriptions of these two concepts (Ryan and Deci, 2000; Marr, 2005). Ryan and Deci (2000) describe intrinsic motivation as undertaking an activity purely for its 'inherent satisfactions' and not for 'separable consequences' while extrinsic motivation is characterised only by the latter. These descriptions support those of Pintrich and Schunk (1996). However, others have argued that the outcomes of activity cannot be separated from the individual and that external factors and consequences influence intrinsic motivation (Bateman and Crant, 2005; Marr, 2005).

This debate is important, as an association between intrinsic/extrinsic motivation and deep and surface approaches to learning has been proposed. Although only a few studies have specifically investigated the presence or nature of this association eg Fransson (1977), Bruinsma (2002), several sources have posited its existence eg. Gibbs (1992), Marton and Saljo (1997). The classification of several of the categories of description in Tables 5.1a and Tables 5.1b and c (Appendix 6 p. 286 and 288) and, thus, their potential influence on approaches to learning depend on whether an exclusive or more interactive description of extrinsic motivation is accepted. For example, the quotations in Table 5.2b (Appendix 6 p. 288) for 'Career/academic aspirations' could be intrinsic, in that they derive from within the student, but could also be extrinsic, as career and academic advancement would be argued by Ryan and Deci (2000) to be 'separable consequences'.

Marr (2005) and Bateman and Crant (2005) argue, convincingly, that definitions like those of Ryan and Deci's, although accepted by some, are artificial and simplistic, and do not recognise that external factors and consequences can have an impact on intrinsic motivation. In light of this, in the 'Positive' grouping in Tables 5.1a, b and c, only the 'External support and expectations' and 'Progress made' categories of description, both of which do not include the student's aspirations or emotions, have been listed as extrinsic motivations. No hierarchical relationship was found among the categories of description in Tables 5.1a, b and c.

The categories of description identified that participants' motivations were influenced by a number of external sources, including experience in a range of settings eg. employment, educational, in addition to several internal variables. Some categories of description were present in both the positive and negative groups eg 'Placement experiences', 'External support' / 'External pressures'. This suggests that a range of factors can inform individual perceptions of the same elements and that motivation is sensitive to the nature of these experiences.

Consideration of descriptors of intrinsic/extrinsic motivation and deep and surface approaches to learning respectively does suggest such a link. The internal nature of intrinsic motivation (Marton and Saljo, 1997; Ryan and Deci (2000) aligns logically with the presence of interest and a desire to understand which are characteristic of a deep approach to learning (Entwistle, 1988; Prosser and Trigwell, 1999). Despite the debate surrounding the breadth of

definition of extrinsic motivation (Marr, 2005), the externality of expectations and motivations found both within this concept and surface approaches to learning support the existence of a direct association between them (Entwistle, 1988; Marton and Saljo, 1997; Prosser and Trigwell, 1999).

The limited research literature into this association does support this linkage. In Fransson's (1977) study, participants with an interest in the text provided and/or not tested on the text demonstrated deeper approaches to learning than those without an interest in the text and/or tested after reading the text. In a more recent study, Bruinsma (2004) investigated the relationships among motivation, approaches to learning and academic achievement A statistically significant direct relationship between intrinsic motivation and deep approaches to learning was found in the first year of the study although the association was less clear in subsequent years. Bruinsma (2004) also found a consistent positive link between high levels of motivation and academic achievement. The presence of a large number of 'Positive' intrinsic-type categories of description in the current study suggests an association with desirable deeper approaches to learning. The presence of some negative categories of description does challenge this, as de-motivating factors are likely to be associated with surface approaches to learning. However, the much smaller number of positive responses with an extrinsic nature and negative responses is likely to have reduced the strength of their effect.

Many of the factors identified in the study (Table 5.1b Appendix 6 p.286) support those found in other research into the motivations of students from

non-traditional backgrounds. One of the categories with the largest number of responses was 'Subject interest'. For example,

> '...it's the subject...this is what I'm interested in.' (I1 S17)

This internal notion of interest was also identified by Woodley et al. (1987), Wilson (1997) and Olaussen and Braten (2001).

Several students also stated a desire for personal and professional achievement and advancement. For example,

> 'I always wanted to be a physio...' (I5 S14) (Qualification aspiration)
> 'I wanted to better myself really. I'd like to have a degree.' (I1 S10) (Career/academic aspirations)

This motivation was also found by Woodley et al. (1987), Wilss et al. (1999) and Boulton-Lewis et al. (2004).

The influences of external factors like family and friends were found to be both positive in terms of support, but negative in terms of time pressures and demands. For example,

> 'My Mum and Dad keep going 'Oh, it's only two more years'.' (I3 S15) (External support and expectations)
> '...other commitments that you have...pressures from outside...sort of everyday life really...' (I5 S3) (External pressures)

This apparently contradictory pattern is not novel. While Shanahan (2000) and Olaussen and Braten (2001) found that the support of others like friends and family had a positive effect on motivation, Shanahan and other researchers (Woodley et al., 1987; Young, 1990) also found that students' motivation was challenged by external demands and pressures on their time. This situation is understandable when one considers that mature students are more likely to

have ongoing responsibilities to others, which younger students are less likely to experience.

The main negative effects on motivation were stated to be aspects related to the programme, with the largest number of responses being around workload (Table 5.1a). For example,

> 'The amount of work we've got to do I think has actually decreased my motivation.' (I2 S4) (Workload)
> 'I've lost a lot of motivation...because we're doing less clinical stuff.' (I4 S5) (Curriculum design)

It is possible, that, as Moon (2005) identified in her investigation into the learning issues experienced by students from non-traditional academic backgrounds, identified difficulties relating to workload and time management may not reflect inability to manage these variables or curriculum design issues, but indicate the effect of external demands on students' time and attention. Some students in the current study did identify negative effects of external pressures. For example,

> '...other commitments that you have...pressures from outside...sort of everyday life really...' (I5 S3) (External pressures)

Despite these pressures, as Young (1990) found among mature physiotherapy students, the negative influences did not deter the students participating in the current study from obtaining the qualification, with many achieving at high levels.

Some motivational factors found in this study reflected the longitudinal nature of the study, like the positive effect of making progress through the programme. For example,

'You see that there is light at the end of the tunnel.' (I2 S10) (Progress made)

Such factors might also have influenced the motivation of students in other studies. However, the cross-sectional nature of these studies might not have facilitated responses of this type.

The motivation to become a physiotherapist was the only category of description found for each set of interviews and this category also contained some of the largest number of responses (Figure 5.1a). Learning achieved and progress made on the programme also had strong positive effects on participant's motivation. The external support of a range of people was also important to participants over time. Among the negative categories of description, workload was identified as the most persistent challenge to motivation.

Overall, these findings present a picture of high levels of intrinsic motivation which persisted across the duration of the programme (Table 5.1a).

Effects of prior experience on learning

Influence of prior academic experience on learning

Two questions were asked relating to prior academic experience:

- With reference to your academic background, how closely did your expectations of teaching and learning on this course match the reality of experiencing the course?
- How did your past learning experiences influence your studying and learning now?

The outcome space and representative responses are presented in Table 5.2b (Appendix 6 p. 290) and the number of responses in each category of description are presented in Table 5.2a. The responses referred to either particular pragmatic or broader curricular issues. The procedural factors identified in the former group were largely about efficient use of time while one participant focussed on learning. Participants identified both strong and weak associations between what they expected, based on prior experiences, and what the reality of study for a physiotherapy degree had proved to be. More weaknesses than strengths were identified.

No hierarchical relationships were found among the categories of description.

Table 5.2a Influence of prior learning experience

Categories of description	Interview 1 (17)
Procedural	
Efficiency	6
Understand learning	1
Limited value	
Curriculum design	9
Academic demands	2
Prior experience similar	
Experiences similar	3

Although some participants felt that their prior educational experiences had prepared them well to undertake the physiotherapy programme, the majority did not. It might have been anticipated that students who had already completed a degree would find the transition less challenging than those from non-degree backgrounds. However, the findings demonstrated that the picture was more complex. Three students stated that their prior experiences had been similar to those on the physiotherapy programme. For example,

> 'I have to say, doing the degree before, at least I know what's expected.' (S2) (Experiences similar)

However, of these, only two entered with a degree, and another of those with a degree identified that this experience had been of limited value to them:

> 'I knew it was going to be a lot harder than the last one.' (S9) (Academic demands)

These findings suggest that already having a degree did confer some advantage, but that the nature and demands of different degree programmes can differ to the extent that, for some students, prior experience may have offered them limited benefits.

Overall, the majority of students taking part in the study came from non-degree backgrounds and the larger number of responses in the two categories which identified limited preparation for degree level study reflects this. Consideration of the representative quotations (Table 5.2b, Appendix 6 p. 290) identifies that several aspects of the programme design and demands had not been expected. For example,

> '....being made to stand on your own two feet...' (S14) (Curriculum design)
> 'It's a lot harder than I was expecting...' (S13) (Academic demands)

Staff on the programme anticipated this and, at interview, all students had been informed of the pace of the programme, the requirement for independent learning and the academic demands of degree-level study. Responses to this question suggest, however, that being aware of these issues theoretically is different from the reality of experiencing them. This is not surprising, as it is difficult to anticipate such a reality when prior experience provides only limited awareness.

It is possible that the negative responses to these questions could have indicated de-motivating factors, and been associated with adoption of a surface approach to learning. However, despite the challenges imposed on some participants by degree level study, all the students successfully completed the programme, with its focus on achievement of high quality learning outcomes. This outcome supports the literature which has identified that the high levels of motivation, determination and hard work often found in students from non-traditional backgrounds enable them to overcome such difficulties (Young, 1990; Richardson, 1995). Staff were able to assist students in managing the increased demands of the programme by offering and providing ongoing and appropriate support, and this was identified by some respondents as a feature of their learning experiences which was different from the past. For example,

> 'It's more supportive, the role of the teacher.' (S4)
> (Curriculum design)

The importance of efficient organisation and time management, identified by some respondents (Table 5.2a) should have assisted them in managing any unexpected demands of the programme. For example,

> 'I have to be organised, I've learned that...' (S10)
> (Efficiency)

Influence of assistant experience on learning during clinical placements

Although some students identified that their prior academic experiences did not prepare them adequately for undertaking the physiotherapy programme,

their directly relevant clinical experience should have proved to be a positive factor for their learning on clinical placements.

The categories of description and representative quotations for this interaction are presented in Table 5.3b (Appendix 6 p. 292) and the number of responses in each category are summarised in Table 5.3a. This issue was not addressed in Interview 1, as the students had not yet undertaken a clinical placement. In Interviews 2 – 4 the question related to placements which had been undertaken in the time period since the previous interview. As with the general motivational factors, the question in Interview 5 asked students to give an overview of their placements throughout the programme.

The responses fell into groups of either positive or negative influences. Within the positive group, some categories of description formed natural sub-groupings. One of these referred to participants' existing skills and experience, while another reflected the advantages these had for their learning. Other positive aspects identified in the outcome space were: being treated as a student rather than as an assistant, learning opportunities associated with ongoing employment, and mature age. A smaller number of negative effects associated with participants' experience as assistants were also identified. The only area in which hierarchical relationships were found was in the 'Influences on learning' sub-group and these categories of description have been presented in hierarchical order. Confidence would play a role in facilitating learning which, in turn, would lead to faster progress.

Table 5.3a Influence of assistant experience on clinical placement learning

Categories of description	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Positive				
Experience and skills				
Communication skills	13	6	9	10
Environment familiarity	11	3	6	2
Professional behaviour			1	
Past experience				2
Influences on learning				
Confident	4		3	**5**
Learning facilitated	4			
Faster progress	10	1	2	6
Others				
Treated as student	7			10
Ongoing employment	1		1	
Maturity	1			
Negative				
Assistant experience	8	2		1
Educators' expectations	5			
Delegation to assistants	3			

Most responses were positive in nature, with all participants recognising and appreciating the value of their prior clinical experiences. In all four sets of interviews which addressed this topic, several participants identified the positive influences of their familiarity with clinical environments and established communication skills with patients, staff and others on their learning while on placements. For example,

> 'You more or less know how things work, how things are run.' (I2 S6) (Environment familiarity)
> '…you're quite willing to go and talk to anybody…' (I5 S2) (Communication skills)

The predominance of positive effects of prior clinical experiences found in the study supports the conclusions reached by Dochy et al. (1999), Shanahan (2000) and Jackson (2003), that prior knowledge and experience are associated with positive learning experiences and outcomes.

These are obviously advantages which students without such experience do not share. Students who have been employed in non-physiotherapy settings in the past would be likely to find that experience of some assistance when undertaking placement learning (Shanahan, 2000). However, this would only be relatively limited in relation to that experienced by students with both past and ongoing experience in similar clinical settings. These findings were thus not surprising. In fact, while talking about this issue, some of the students in the current study volunteered that they had noticed how, unlike them, other students in the same clinical setting were both uncertain of departmental procedures and were tentative in communicating with both patients and staff.

Although also not unexpected, the additional findings that students perceived that this experience enabled them to learn and function at a higher level when they were on placement is important. For example,

> 'It made it a lot easier for...me to pick up things.' (I2 S12)
> (Learning facilitated)
> '...you're straight away sort of looking at clinical...' (I5 S5)
> (Faster progress)

As Wilss et al. (1999) state, it is the interaction between informal and formal learning which is important, not their mere co-existence. It is clear from Table 5.3a that the majority of responses relating to this interaction were given at Interview 2, which took place soon after the students' first placement. Its low level of presence in Interviews 3 and 4 may suggest that this strength did not persist. However, the proportionally large number of students who identified that their experience enabled them to make faster and greater progress in

Interview 5 suggests that this advantage did continue throughout the programme.

There was evidence that prior experience enabled higher levels of achievement by students on the part-time programme. As part of an audit which I undertook of the use of the common clinical assessment form, which is used by all physiotherapy education providers in the South-East of England, analysis of marks identified that students on the part-time programme performed better, particularly in relation to communication and professionalism, than the students on full-time programmes who did not have the same clinical experience (Morris, 2003).

Some students in the current study also perceived that their experiential learning made them feel more relaxed and confident, able to use initiative more and question their educators. For example,

> 'You're just more used to using your initiative a bit more...' (I4 S1) (Confident)
> '...like we got into a few debates with the physios on why we do this and why we do that.' (I2 S14) (Confident)

Jackson (2003), in her study on an earlier cohort of students on the same physiotherapy programme, found a similar theme of increased confidence, present mainly when on clinical placements, associated with the students' prior experiential learning. These findings also support those of Boulton-Lewis et al. (2001) who found that the insights which students gained by relating their formal to their informal learning enabled them to question and challenge their teachers. This supports the general assertion made by

Richardson (1994) that students with experience undergo learning processes which are integrative and informed rather than largely acquisitive and one-sided. The ability and willingness of some students in the study to question people in positions of power within their educational milieu suggests that the students were adopting deep approaches to learning and that their learning was more likely to be of high quality.

Parallels were also present between other categories of description found in the study and those identified by Jackson (2003). These included the opportunity to continue learning while at work. For example,

> '...analysing your physios (at work), watching your physios, how they work is really, really helpful.' (I2 S11) (Ongoing employment)

Although the focus and method used by Jackson was not identical to that used in the current study, the similarity in findings regarding the influences of students' past clinical experience and their learning while on placement suggests that these influences are consistent and not unique to one group of students.

The literature and most of the findings in this study identified a positive influence of informal learning. However, some negative factors were also found. In early placements (Table 5.3b Appendix 6 p. 292), some students felt that they were tending to stay in their assistant role, being limited to their assistant role by clinical educators, or that their clinical educators had unrealistically high expectations of them while on placement. For example,

> 'I tend to start off taking the role of the assistant still.' (I3 S5) (Assistant experience)

'Sometimes I think they expected too much.' (I2 S4)
(Educator's expectations)

The latter issue was also found by Jackson (2003). The students on the part-time programme were often the first with backgrounds in physiotherapy whom clinical educators had encountered, and a period of adjustment had been anticipated. Teaching staff had also suspected that adjustments would also be needed of the students as they had to adopt a different role from that they normally had in clinical settings, and the current study confirmed that some students did have to make such adjustments. This issue disappeared over time and, by the end of programme, when reviewing their experiences overall in Interview 5 (Tables 5.3a and b), almost all those interviewed stated that they had been treated as a student. For example,

'I wasn't treated as an assistant at all.' (I2 S7)
(Treated as student)

In addition to exploring the impact of the students' prior clinical experience on their learning and performance on clinical placement, I was also interested in discovering whether the students felt that this advantage, if present, was retained over time or was reduced as the focus of clinical assessment moved away from communication and interpersonal skills and understanding of the context of professional practice towards the challenging areas of clinical reasoning and patient management, with which they would be less familiar. It is clear from Table 5.3a that, although not quite so influential, the students felt that their prior clinical experience continued to be a positive influence for their learning throughout the programme.

It is notable in Table 5.3a that responses in the 'Communication skills' and 'Environment familiarity' categories of description were both numerous and made in all the interviews. It was possible that the importance of these factors may have declined over time as the emphasis of the learning and assessment activities on clinical placements over time moved progressively away from generic attributes like communication towards reflection and clinical reasoning.

Overall, these findings support the expectation that students' prior experiences facilitated their learning on clinical placements. The largely positive influences were likely to have strengthened their confidence and motivation, encouraging utilisation of deep approaches to learning. The high levels of performance achieved in their clinical placement assessments support this conclusion.

Interaction between learning and employment

The wording of the questions relating to learning and employment varied across interviews depending on their particular timing during the programme (Appendix 4). Despite this variation, the analysis identified common categories of description which are presented with their representative quotations in Table 5.4b (Appendix 6 p. 295) and the frequency of responses in Table 5.4a. The categories of description fell into two sub-groups, a positive one 'Learning enhancement' in which ongoing employment provided opportunities for continued learning, and a second one ' Assistant role' relating to the impact of their learning on their assistant role. This group

contained both positive and negative elements. No hierarchical relationships emerged across the outcome space.

Table 5.4a Interactions between learning and employment

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Learning enhancement					
Treated as student	2	5	5	2	
Learning opportunities	9	5	3		
Assistant role					
Value added	9	8	6	4	2
Greater responsibility	1	13	10	10	7
Increased role consequences		1	1	3	3
Limited role change		8	6	3	6
Learning resource		1	1	1	1
Absence felt		1			
Qualification aspiration		1			

The quotations for 'Treated as student' and 'Learning opportunities' (Table 5.4b, Appendix 6 p. 295) indicate that learning opportunities were identified by both the students and qualified staff. For example,

> '...and she'll (the physiotherapist) actually say 'What do you think?'.' (I1 S3)
> '...with my colleagues we can sort of have discussions about what we're doing and why.' (I2 S14)

This suggests a positive effect on student motivation and learning, as their increasing knowledge and understanding were recognised by qualified colleagues. Active encouragement and assistance by staff for the students to continue their learning while at work was also found in Jackson's study (2003). As in the current study, the students valued this.

The absence of any responses in either of the categories under "Learning enhancement' in the final interviews might reflect that this advantage had become embedded and assumed, and students did not particularly identify these as a factor. It may also reflect the fact that the students spent more than half of their final year on clinical placement and that this, along with limited new learning of physiotherapy skills, reduced the importance of having work as an additional learning opportunity.

Over the four years of the programme, particularly after the first year, almost all the students, at one interview or another, identified that they were either granted or expected to take on greater responsibility within their assistant role. Table 5.4b (Appendix 6 p. 295) illustrates that, in most instances, this was viewed positively. For example,

> '...sometimes they will expect more...and then leave the decision up to us, which is wonderful (I3 S7) (Greater responsibility)

However, one student stated that she was not happy with this development:

> '...when they did ask me to work at a higher level I did get quite cross.' (I2 S5) (Greater responsibility),

and the following category 'Increased role consequences' demonstrates that this outcome was sometimes problematic. For example,

> '...the other assistant started looking at me to order them around and I backed off from that.' (I5 S17) (Increased role consequences)

Although some students found that taking on greater responsibility was rewarded with promotion, others were not. For example,

> 'I'm still on the lowest assistant (grade) possible although

> I'm a third year student...seems a bit unfair because I am doing a lot more than the other assistants.' (I4 S15) (Increased role consequences)
> '...in my job things have changed to the point where I'm getting put forward for technical instructor...' (I4 S17) (Increased role consequences)

Some responses in the 'Increased role consequences' category also indicated that, in some cases, difficulties were experienced both by students and staff in their departments as to where their learning placed them within the staffing structure. For example,

> '...there's a lot of to's and fro's whether I should be doing it (more).' (I3 S2)

The occurrence of such difficulties is perhaps not unexpected when departmental staff were unfamiliar with having assistants on the programme and managing the consequences for their work roles. In contrast, some participants identified positive consequences. For example,

> '...in my own job things have changed to the point where I'm getting put forward for technical instructor..' (I4 S17)

Nevertheless it is unfortunate that issues were still present for some in the later stages of their education.

Adjustment difficulties are further illustrated in the category 'Limited role change'. Table 5.4b (Appendix 6 p. 295) identifies that some participants were reluctant, for different reasons, to take on additional responsibility in addition to staff having difficulty in utilising the students' increased abilities appropriately. For example,

> '...sometimes you're allowed to do things because it actually suits them and other times you're not.' (I5 S8)
> 'I think among other assistants I'm looked on as different, which I don't like...I'm keen to try and keep it (being a student) as separate as possible.' (I2 S12)

One of the reasons which had been given to some students for them not being given additional responsibility was that their liability insurance did not cover them for more advanced tasks than they were already performing. This is not the case, as liability insurance does not specify tasks and the Chartered Society of Physiotherapy (CSP, 2004) guidelines only state that assistants must be supervised, not what types of activities they can undertake. This example further illustrates the challenges faced by students who continue employment as assistants.

Jackson's (2003) study also identified a range of positive and negative findings regarding the impact of students' additional abilities on their roles as assistants. She found that students who had been given greater responsibility and were happy with this arrangement were much happier at work than others. As in Jackson's study, students in the current study also found not being able to take on a greater role at work very frustrating. For example,

> 'I find it hard to switch off sometimes from the student part. I want to go and do things, but I'm not allowed.' (I3 S10) (Limited role change)

This issue, particularly the negative aspects, might have impacted on both students' motivation and the opportunities for learning, which the ongoing employment offered. Teaching staff were happy to assist both students and clinical staff in managing these situations, but their continued presence at the end of the programme in the third cohort to qualify on the programme suggests that resolution was still needed in some cases. Familiarity with having colleagues on the programme and current career and salary

restructuring in the NHS (Agenda for Change) may enable students on the part-time programme to take on greater responsibility, with appropriate recognition and status in the future. This would facilitate these students contributing more fully to the service than some have been able to do, while also consolidating and furthering their learning.

Despite the presence of some challenges, the impact of students' learning on their role as assistants and vice versa appears to have been largely positive over time, with most students being able to use their ongoing employment to consolidate and continue their learning (see Table 5.4a).

Summary

Participants identified largely positive motivation towards undertaking the programme. These were mostly intrinsic in nature, a feature which research suggests is associated with desirable deep approaches to learning. The desire to become a physiotherapist was the strongest and most persistent motivation throughout the programme.

Participants' prior academic experiences had mixed value in preparing them for the physiotherapy programme. Among those who had degrees, not all felt confident about further study at degree level. Participants without degrees also presented a mixed pattern, with some finding the transition difficult and others less so. Overall, though, although they had been informed of the demands of study for physiotherapy, most participants found the reality of

higher education challenging. Despite this, all participants were successful in completing the programme.

Their prior employment as physiotherapy assistants was identified by participants to be a positive influence for their learning on clinical placements. The advantages for their learning which were conferred by experience in communication with patients and others in the clinical setting, and their familiarity with the routines of the health care environment were most strongly identified. Some did identify challenges to their motivation when uncertainty was encountered between the nature of their role as students and their role as assistants on placements during the earlier parts of the programme. However, these issues were not raised during later interviews.

A positive picture was found regarding learning opportunities associated with participants' ongoing employment as assistants. However, the situation regarding levels of responsibility and formal recognition of growing knowledge and skills was mixed. In some cases, this was resolved satisfactorily, but in others it persisted throughout the programme.

Overall, despite the presence of some negative influences, respondents identified strong positive personal and experiential motivational factors which were likely to be positive for their learning outcomes and achievement.

Chapter 6

Results and discussion

Conceptual perceptions

Findings for the conceptions of learning, understanding and memorisation are presented and discussed in this chapter. The content is relevant to the second research question.

Conceptions of learning

In order to optimise the likelihood of obtaining useful longitudinal data, in Interviews 2 – 5 the students were asked to identify their conceptions of learning at that time and not consider what their responses had been during earlier interviews.

The research literature on conceptions of learning by Saljo (1979) and Marton et al. (1993) was not used as a guidance framework during identification of the categories of description during the analysis, and categories were allowed to emerge from the data. The categories of description and their representative quotations are presented in Table 6.1b (Appendix 6 p. 299). The eight categories included in the outcome space demonstrate a variety of conceptions which range from basic, where the learning is perceived independently of other factors eg. recall, to complex, where it is integrated into thinking and experience eg. discourse, adaptation.

The order in which the categories of description are presented in Tables 6.1a and Tables 6.1b and c (Appendix 6 p. 299 and 301) reflects the norm in the literature in that less complex categories are listed first and more complex ones later. Whether this order represents a hierarchical relationship among the categories is discussed later. The categories of description identified by Saljo (1979) and Marton et al. (1993) were compared with those found in the current study. For those categories which matched, the relevant Saljo/Marton et al category descriptor is included in brackets after the category title in Tables 6.1a, b and c.

Table 6.1a identifies that the largest number of responses were in the same three categories ' Recall', 'Application' and 'Explanation' in each set of interviews. The only other category which also contained responses for each stage of the study was 'Comprehension'.

Table 6.1a Conceptions of learning

Categories of description	**Interview 1 (17)**	**Interview 2 (16)**	**Interview 3 (17)**	**Interview 4 (15)**	**Interview 5 (13)**
Recall (*memorising**)	12	6	10	7	3
Application (applying*)	6	5	8	6	9
Explanation	5	5	6	7	4
Comprehension (*understanding**)	2	4	4	2	1
Conviction	1	2		1	
Discourse		8	4	2	
Adaptation			3		
Transformation (changing as a person*)		1			

* Saljo/Marton et al categories:
Memorising – 'learning as memorising' (2)
Applying – 'learning as the application of facts, procedures etc which can be retained and/or utilised in practice' (3)

One difference between this study and others which have investigated students' conceptions of learning is the wording of the question asked. The question 'What do you actually mean by learning?' (Saljo, 1979) might have elicited a different set of responses from the question 'How do you know when you've learned something', which, in the current study, was framed within the specific context of the physiotherapy programme under consideration.

Despite this, some of the Saljo/Marton conceptions are represented in the outcomes space in this study, suggesting an alignment between these findings and those from other research (Saljo, 1979; Marton et al., 1993; Boulton Lewis et al., 2003). However, the results of this study differ from the conclusions drawn by Saljo and others that conceptions of knowledge acquisition, recall and application are quantitative in nature. The representative quotations in Table 6.1b (Appendix 6 p. 299) for the category of 'Recall' indicate a quantitative conception. For example,

> '...when I recall things without any prompting.' (I1 S15)

However, this was not true for the category of 'Application'. Some of the responses were quantitative and similar to the level of response found by Saljo (1979). For example,

> '...you're able to use the information you've got.' (I3 S16)

Conversely, others related application to effectiveness, which suggests a higher order qualitative conception. For example,

> 'when you are able to apply it and you're getting the results you expect.' (I4 S8)

A similar mixed pattern was also identified in the category of 'Explanation'. For example,

> '...I can describe it to someone, explain it...' (I3 S16)
> 'When you can explain it to somebody else and they understand what you're saying.' (I1 S9)

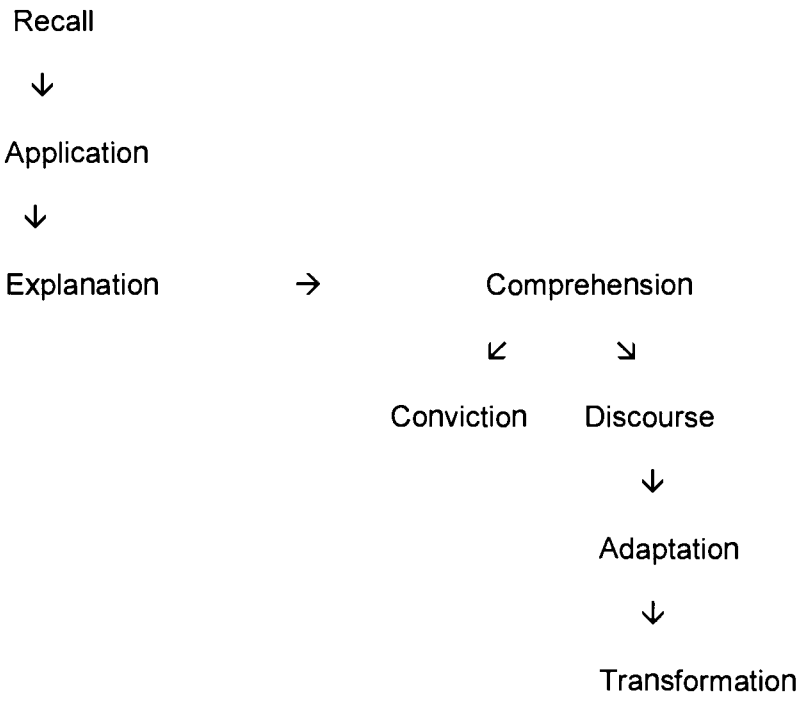
In this study, only the first category of description 'Recall' is purely quantitative in nature, supporting Meyer's suggestion (1995) that, although a number of conceptions of learning exist among learners, these may be neither purely quantitative nor purely qualitative in nature.

Eight categories of description were identified in the study. Not only does this number exceed the six identified by Saljo (1979) and Marton et al., (1993) but only four of their categories were present within the eight. Several other studies have similar outcomes. Purdie et al. (1996) identified nine categories, of which only six were similar in nature to the Saljo/Marton ones. None of the three additional categories found by Purdie et al (1996) was similar to those found in the current study. The findings for the meaning of learning obtained from interviews by Boulton-Lewis et al. (2000a,b; 2001; 2003) with students from Indigenous backgrounds in Australia were also a mix of some of the Saljo/Marton categories of description and others which were different. Boulton-Lewis et al. included representative quotations in their articles which suggest that the additional categories of description they identified resembled some of those found in the current study. However, the level of detail included in their report does not allow for a more definite conclusion to be drawn. The pattern of partial agreement among categories of description of conceptions of learning suggests that contextual factors are important

influences on students' perceptions. This has implications for generalisability of findings.

The presence of a hierarchical relationship among the categories of description was sought as part of the phenomenographic analysis. This process was informed by the hierarchical characteristics identified in the literature. However, the issues already identified concerning the level of complexity and apparent lack of progressive development in thinking among some categories questions the existence of a simple linear relationship, a position supported by Meyer (1995). Figure 6.1 sets out a proposed framework for understanding the inter-relationships among the categories of description in the current study. The relationships among the categories of description for conceptions of learning did not appear to be linear and the framework illustrates this.

Figure 6.1 Relationships among conceptions of learning



Notwithstanding the complexities already identified within the 'Application' and 'Explanation' categories compared with 'Recall', a hierarchical relationship among the first three categories of description is proposed. Application of learning requires the ability to recall. The position of 'Explanation' in relation to 'Application' is not quite as obvious. Explanation is based on recall, but could be independent of application. For example,

> '...I can describe it to someone else, explain it...'
> (I3 S16) (Explanation)

However, the physiotherapeutic-based context of the quotation suggests that explanation, in this study, is associated with practice. For example,

> '...I should be able to teach someone else how to do it and they should be able to do that and get something out of it.' (I2 S17) (Explanation)

On this premise, these three categories have thus been listed linearly in Figure 6.1.

The quotations which form the 'Comprehension' category include some elements which are based on 'explanation'. For example,

> '...I can describe it to someone, explain it...' (I3 S16) (Explanation)

could be enabled by

> 'When I've understood it...' (I1 S7) (Comprehension)

However, some do not contain this association, and this category has been positioned independently, with some linkage with 'Explanation' to reflect this. The 'Conviction' category also stands alone, as it is entirely focussed round

intellectual awareness of learning, with no association with ongoing use. For example,

'I know whether I know it or I don't.' (I2 S7)

The quotations in the 'Discourse', 'Adaptation' and 'Transformation' categories demonstrate increasing relative complexity, and have been presented hierarchically in Figure 6.1.

An increase in complexity of conceptions of learning over time, which some authors have proposed (Entwistle, 1997), was not found in the current study. The data in Table 6.1a does not suggest any noticeable development in complexity of conceptions for the respondents across the four years of study on a programme whose design and implementation embodies sound educational principles. No pattern of consistent increasing complexity over time was present for any of the individual students either (Table 6.1c Appendix 6 p. 301). The findings for the group support those of a larger quantitative study of physiotherapy students in England and Wales (Morris and Meyer, 2002), and those of the longitudinal study by Boulton-Lewis and colleagues (Boulton-Lewis et al., 2004) in which notable temporal stability was found. However, they differ from those of Perry (1970, cited in Entwistle 1988) and Morgan and Beaty (1997) in which a transition in conceptions of learning from predominantly quantitative towards more qualitative ones was found as students progressed through their studies. The findings of this research, and the established position within educational research that lower level conceptions are associated with poorer quality learning, suggests that

the absence of such a transition in this study had a similar effect. However, the participants in the study obtained a much higher number of first class honours degrees than is the national average within physiotherapy.

There are a number of possible explanations for this finding of non-progression. The design of physiotherapy programmes in the UK and the nature of clinical practice are such that the possibility that the use of quantitative forms of assessment encourages students to hold lower order conceptions over time is unlikely. Although assessment during the earlier stages of the programme under consideration tended to be more quantitative in nature, this situation changed at higher levels of study when students were required to demonstrate reflection, clinical reasoning and higher order thinking in order to graduate.

The sensitivity of data collection methods, and possible homogeneity among physiotherapy students could both be explanatory factors. However, it is notable that similar patterns of findings have been identified both by quantitative and qualitative study designs. It is also possible that the nature of conceptions of learning held may not be the powerful predictors of performance and graduate quality which some have suggested.

Overall, the findings from this study identified a number of conceptions of learning, some of which are additional or different from those found by other researchers. While some of the categories of description appear to be hierarchically related to one another, a more complex picture of inter-

relationships was identified. Evidence for longitudinal development in complexity of conceptions of learning was absent.

Conceptions of understanding

The question 'How do you know when you've understood what you've learned?' sought perceptions of understanding at the time of each interview.

The categories of description were first identified directly from the interview transcripts. The representative quotations for each category of description are presented in Table 6.2b (Appendix 6 p. 302). The categories of description and frequency of responses for conceptions of understanding are identified in Table 6.2a. The outcome space contains eleven categories of description, several of which have similar descriptors to those found for conceptions of learning. Similarly, the nature of the categories ranged from simple eg. 'Recall', Retention' to more complex eg. 'Discourse', 'Contextualisation'.

Table 6.2a Conceptions of understanding

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Recall	2	1	3	1	
Retention	1	1			
Application	7	8	11	8	7
Outcomes			4		
Explanation (*explaining**)	4	3	3	4	5
Comprehension	10	4		2	
Conviction (*provisional wholeness**)			4		2
Understand others		2			
Discourse	1	3	1	3	2
Transfer (*flexibility**)		3	4		
Contextualisation	2				

* Entwistle and Entwistle categories:
Explaining – 'confidence about explaining'
Provisional wholeness – 'coherence, connectedness and 'provisional wholeness' (things clicking into place)
Flexibility – 'flexibility in adapting and applying'

After the outcome space had been identified the categories were then compared with those presented in the literature. The Entwistle and Entwistle (1992) study of final year students' perceptions of understanding was the main source of comparison. The three category themes identified by Entwistle and Entwistle (1992) which matched those found in this study are included in brackets in Tables 6.2a and Tables 6.2b and c (Appendix 6 p. 302 and 304). Some aspects of other Entwistle and Entwistle categories were present in the categories identified in the current study, but either the scope or overall tenor of their representative quotations did not match those in the current study closely enough to be considered analogous. As for conceptions of learning, the nature of the question asked in the Entwistle and Entwistle study was different from that asked in this study: 'What is understanding?' versus ' How do you know when you have understood what you have learned?'. As for conceptions of learning, it is possible that the disparity in the findings might reflect differences in the wording and context of the questions asked.

Newton et al. (1998) argued that, while learning can be rote, understanding is a dynamic process which requires the active engagement of the learner. The majority of the categories of description found in this study involved active manipulation of learning at an intellectual and/or application level, a finding which supports this assertion. For example,

'...I know how to use my knowledge and put that into practice.' (I4 S4) (Application)
'...you know in your own mind and can link it to other things...' (I3 S15) (Comprehension)
'...you can sort of...argue your point and have different perspectives on something.' (I5 S14) (Discourse).

A large number of respondents in the first interviews held an internal conception 'Comprehension', but across the interviews, the largest number and frequency of responses was in the 'Explanation' category and, to a lesser extent, that of 'Application'. This suggests that the students held a largely pragmatic view of this concept. This contrasts with the findings for the final year students in Entwistle and Entwistle's study (1992) and the first year students in the study by van Rossum et al. (1985) where the majority of responses were internal and intellectual in nature. This difference may reflect the dissimilarities between the nature of the subjects being studied by the students in the current study, and those in the other two investigations.

The notable resemblance, in this study, between many of the categories of description regarding learning and understanding suggests that there may be a close link between the concepts. The presence of the category 'Comprehension' in Table 6.1a under conceptions of learning, supports this possibility. For example,

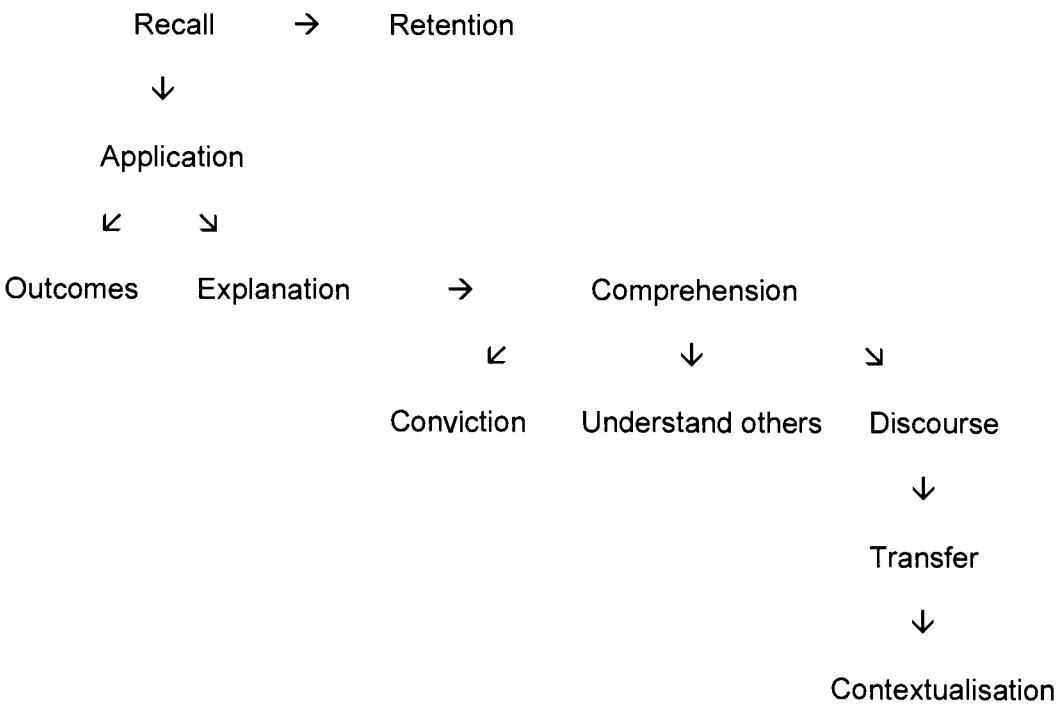
'When I've understood it...' (I1 S7)

Some researchers have used the two concepts interchangeably. In the Boulton-Lewis et al. (2004) study, when investigating conceptions of learning,

some questions were specifically asked about understanding. The findings of the current study suggest a complex relationship between learning and understanding. For some students they are synonymous, while, for others, they may be separate or relate to one another in different ways in different learning contexts. The paucity of research into the association between conceptions of learning and understanding prevents any conclusions being drawn.

As for conceptions of learning, a hierarchical relationship was sought for conceptions of understanding. Similarly, non-linear inter-relationships were found. Figure 6.2 provides a proposed framework for the structure present in the current study.

Figure 6.2 Relationships among conceptions of understanding



Quotations in the 'Recall' category suggested that it represented the lowest order conception. Although 'Retention' was based on recall, it did not involve any development, so has been presented as a separate line in the hierarchy. For example,

> '...if I learn something and I remember that next year.' (I2 S4)

As was the case for conceptions of learning, the 'Application' category was based on the need to recall. For example,

> '...I know how to use my knowledge and put that into practice.' (I4 S4)

The 'Outcomes' category is an obvious development from 'Application'. However, it is an end in itself. For example,

> 'If they've actually performed what you've asked them to do and you've seen an improvement then obviously you're on the right track...you've understood.' (I4 S9)

The relationships between the 'Explanation' and 'Comprehension' categories and between 'Comprehension' and 'Conviction' are similar to those found for conceptions of learning.

The association between the 'Transfer' and 'Contextualisation' categories appears to be hierarchical. 'Transfer' has a particular focus on breadth of application. For example,

> '...I can apply it to something else, not just to the one thing...' (I3 S12)

In contrast, 'Contextualisation' locates understanding within a broader framework. For example,

> '...able to relate it to something else in life.' (I1 S6)

As for conceptions of learning, the nature of the relationships among categories of description for conceptions of understanding is unclear in the literature. Some studies eg Entwistle and Entwistle (1992) have implied a linear hierarchy, while others eg. Burns et al. (1991) do not.

Another similarity between the pattern of responses for conceptions of learning and understanding was the absence of a notable change in conceptions across the five sets of interviews, at either the group or individual levels. No other longitudinal investigation into conceptions of understanding could be found, challenging further interpretation of these findings.

As was the case for conceptions of learning, no pattern of progression in complexity of conceptions of understanding over time was found, at either group (Table 6.2a) or individual (Table 6.2c Appendix 6 p. 304) levels. The lack of other longitudinal studies into conceptions of learning prevents identification of whether this outcome is unique to this study or not. It also precludes consideration of whether progression in complexity of thinking is important for the quality of learning outcomes, as has been posited for conceptions of learning.

Overall, the findings from the study suggest that conceptions of learning and conceptions of understanding, while different, are closely related, both in terms of their meaning and the ways in which they are perceived. This

relationship could be usefully investigated by other research, preferably longitudinal, which also explored both concepts.

Relationship between understanding and memorisation

Participants were asked to identify how they felt understanding and memorisation related to each other. In order to avoid directing responses, the order in which 'understanding' and 'memorisation' were included in the questions was varied.

The categories of description were derived from the data, without reference to the literature and are presented with their representative quotations in Table 6.3b (Appendix 6 p. 305). Those categories of description which have the word 'understanding' before 'memorisation' have been presented first. This arrangement reflects the evidence in the literature that this order generally represents more desirable perceptions in terms of student learning (Meyer, 1999).

The number of responses in each category for each set of interviews is summarised in Table 6.3a. The predominance of responses favours understanding as a primary focus, while only a few place memorisation first.

Table 6.3a Memorisation / understanding relationship

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Understanding before memorisation	11	10	7	8	8
Understanding aids/facilitates /required for memorisation	10	11	10	6	3
Understanding and memorisation Concurrent			8	6	2
Memorisation before understanding	1				1
Repetition after memorisation facilitates understanding	2				
Memorisation aids understanding					1

Research has identified a conceptual difference between memorising before understanding and memorising after understanding, with the latter being associated with higher quality learning outcomes (Meyer, 1999). Across the five sets of interviews, students consistently asserted that they believed that understanding precedes memorisation, the equivalent of the concept of 'memorisation after understanding' used by other researchers (Meyer, 1999). For example,

> 'I personally would always try to understand things before memorising it.' (I3 S7) (Understanding before memorisation)

Additionally, a large number of respondents stated that understanding is an important prerequisite to achieving memorisation. For example,

'...I have to understand it in order to memorise it...'
(I4 S12) (Understanding facilitates memorisation)

This finding supports those of Mugler and Landbeck (2000), also among students who were from non-traditional backgrounds.

The finding that, in the last three sets of interviews, some responses identified that the processes of understanding and memorisation were concurrent is also of interest. For example,

'They happen at the same time...by understanding it you just automatically remember it.' (I4 S1)
(Understanding and memorisation concurrent)

This has been described in the literature as 'memorisation with understanding' (Marton et al., 1997; Meyer, 2000a; Meyer and Shanahan, 2001). This conception was originally identified in Oriental students and seen, at the time, to be different from the processes present in Western students. The findings from the current study support those of Meyer and Shanahan (2001) that this conception of the relationship between understanding and memorisation is less culturally exclusive than some research to date has suggested (Au and Entwistle, 1999).

In their study of 20 Chinese students, Marton et al (2005) found development, between two sets of interviews, from the majority of participants perceiving memorisation to either precede or follow understanding to the majority perceiving the two processes to be concurrent. Although supportive quotations or numbers of responses in each category were not included in the paper, there does appear to be a similarity with the current study in that the

category 'Understanding and memorisation concurrent' was only found in the later interviews. More longitudinal studies into the relationship between understanding and memorisation, however, are needed before stronger conclusions can be drawn.

Although only identified by a few students in the first set of interviews, the presence of a category involving achievement of understanding via repetition after memorisation is notable. For example,

> '...sometimes, by going over something over and over and over again, trying to memorise that particular thing, suddenly it will just, I'll understand it.' (I1 S12)
> (Memorisation after memorisation facilitates understanding)

This process was also originally found to be present in studies of Oriental students (Kember, 1996), but has subsequently been identified in research in Western cultures too (Meyer and Shanahan, 2001). The findings from the current study confirm that this category of description is not culturally unique.

Hierarchical relationships among categories of description on this topic were not identified in the literature. As part of the phenomenographic approach, the categories found in this study were scrutinised for hierarchical relationships. The one possible hierarchy identified was between the first two categories in Table 6.3b (Appendix 6 p. 305) where the association in the 'Understanding facilitates memorisation' category is closer than it is in 'Understanding before memorisation'.

Overall, the literature suggests that the relationships between understanding and memorisation identified by participants in this study may be a positive influence in terms of quality of learning outcomes.

Summary

Eight conceptions of learning were identified in this study. Some matched those found in other research, but others were different. This outcome of partial similarity has also been found in other studies and suggests that contextual factors play an important role in students' perceptions.

Temporal stability in the nature of conceptions of learning was found in the study. This does not support the assertion in the literature that conceptions develop over time on programmes which require learners to function at progressively more advanced levels. The majority of participants identified lower order conceptions. Although this is not an uncommon finding in educational research, the association posited between these and poorer quality learning outcomes suggests that further research is needed into the nature and strength of this relationship.

The presence of a linear hierarchical relationship among the categories of description identified for conceptions of learning was not found in the study. In contrast with some other research, the inter-relationships were complex and non-hierarchical in places.

A number of the eleven categories of description found relating to conceptions of understanding were similar to those identified for conceptions of learning. This suggests a close association between conceptions of learning and conceptions of understanding. More research is needed into this relationship and its influence on the quality of learning outcomes.

The study also identified other similarities between participants' conceptions of learning and conceptions of understanding. There was temporal stability in the conceptions of understanding identified during the programme, and a complex mix of hierarchical and non-hierarchical inter-relationships among the categories of description.

With a few exceptions, participants identified a focus on understanding as a pre-requisite for useful memorisation. Other research links this perception positively with achievement of high quality learning outcomes. The range of relationships identified in this study also supports the literature which suggests that proposed cultural differences between the way Western and Oriental students perceive the association between understanding and memorisation are not justified.

Chapter 7

Results and discussion

The curriculum

Two main areas are covered in this chapter. First, curriculum design and student learning are considered including: the desired role of the tutor, influences on learning on clinical placements, influences of the programme on learning, and measures by which the programme could be improved. Second, student experiences relating to the research activity: their intentions, its influences on their learning, and their learning from the experience are explored. The material in this chapter is relevant to both the third research question, which refers to the influence of students' life experiences, and the 'study experiences' part of the fourth research question.

Curriculum design

Desired role of the tutor

The categories of description relating to the desired role of the tutor and their representative quotations are presented in Table 7.1b (Appendix 6 p. 307). The three roles identified accurately included all the roles which staff on the programme took. Table 7.1a demonstrates that the number of responses in each category was almost identical.

Although each of the three categories represents differing degrees of involvement of tutors, the roles are not linearly related and these categories of description are not hierarchically related.

Table 7.1a Desired roles of programme tutors

Categories of description	Interview 1 (17)
Provider of information	12
Facilitator and guide	12
A resource	10

The findings of the study by Watkins (1998), in which university students in seven countries were asked to identify the characteristics of 'good' and 'bad' lecturers, are relevant to the findings of the current study. The two main differentiating characteristics identified in all the countries related to the amount of interest generated by lecturers and the clarity of their explanations. Both the characteristics found in the Watkins study were also found in the quotations which formed the 'Provider of information' category in the current study. For example,

> '...the knowledge that the teacher has...they must be able to put it over to the students.' (S17)

Tutor enthusiasm and ability to explain clearly could apply in all the categories identified in the study.

In considering the role of the tutor, Devlin (2002) relates this to the common aim in higher education of graduating students who have the skills and attitudes necessary to become lifelong learners. This is particularly relevant to this study as health professionals are required to demonstrate this characteristic (Chartered Society of Physiotherapy, 2002). Devlin recognises

that becoming a lifelong learner requires that students take responsibility for their learning. She states that this can be encouraged by tutors, but does not explain what approaches would be involved.

The results from the current study suggest that participants valued more traditional teaching methods. However, two of the three categories of description support student-centred approaches and a non-didactic role for tutors. For example,

> '...sets you off to go and do the work yourself...' (S14) (Facilitator and guide)
> '...you can come back to them when you've got questions.' (S14) (A resource)

Table 7.1c (Appendix 6 p. 308) identifies that, with only two exceptions, all participants who gave responses in the 'Provider of information' category also gave responses in one of the other two categories. This outcome, of an overall response in favour of student-centred learning, reflects the nature of teaching and learning activities associated with high quality learning and the attributes required for lifelong learning (Ramsden, 1994). It does need to be borne in mind, however, when interpreting these findings, that the participants were familiar with the philosophy of the role of staff on the programme and this knowledge might have influenced their responses. Notwithstanding this caveat, the categories of description for this research focus suggest that the participants were comfortable with the nature of the roles taken by staff on the programme.

Influences on learning on clinical placements

Table 7.2b (Appendix 6 p. 309) displays the categories of description and representative quotations for the questions asked concerning the aspects of clinical placements which had best and least facilitated learning. It is notable that some categories of description were present in both the positive and negative groups eg 'Educator-student interaction', 'Direct involvement with patients'. Scrutiny of the quotations in these categories of description suggests that responses were positive or negative as a matter of degree, rather than them addressing differing aspects of the experience. For example, perceptions that direct involvement with patients was appropriate were stated positively, while perceptions of insufficient involvement were seen as negative.

The number of responses in each category are presented in Table 7.2a. There were a similar number of categories in each of the two groups and the total number of responses in each group was similar (17 positive, 13 negative).

No hierarchical relationship was found within either group or across the outcome space.

Table 7.2a Overall influences on learning on clinical placement

Categories of description	Interview 5 (13)
Positive	
Direct involvement with patients	9
Educator-student interaction	4
Interaction with junior clinicians	1
Employment experience	1
Placement variety	2
Negative	
Expectations and responsibility	4
Educator-student interaction	4
Direct involvement with patients	1
Employment experience	1
External pressures	2
Placement organisation	1

Despite their ongoing involvement in patient management as assistants throughout the programme, the majority of participants valued the direct involvement with patients which clinical placements afforded them. The representative quotations (Table 7.2b Appendix 6 p. 309) identify that developing a range of skills as well as receiving recognition for that attainment were the main positive aspects. For example,

> '...developing clinical reasoning...' (S14) (Direct involvement with patients)
> '...being given responsibility and a caseload.' (S16) (Direct involvement with patients)

These are two areas in which assistants are often restricted in their roles and participants appeared to appreciate the opportunity to undertake a greater role in patient management while on clinical placement. One of the outcomes found by Jackson (2003) was frustration when students felt they were not getting sufficient hands-on experience. This emotion only emerged once in the current study:

> 'You can't really learn much through in-service training...
> I think I would have benefited from having more patients...' (S5)

Only one participant specifically identified positive effects from their employment experience:

> '...the communication skills allow you to be learning... just ask that question.' (S2)

However, responses to other questions regarding the impact of prior clinical experience indicate that this did have a largely positive impact on their learning (Table 5.3b Appendix 6 p. 292). For example,

> 'It made it a lot easier for me to pick up things.' (I2 S12) Learning facilitated)
> '...the clinical educator can push us just that bit more.' (I5 S14) (Faster progress)

The influence of their interaction with clinical educators was identified as both positive and negative (see Table 7.2b Appendix 6 p. 309). Both sets of responses identified the importance of this interaction relating to the nature and extent of availability and involvement of the clinical educators. For example,

> '...if you get the right clinical educator...I just think you can learn so much from a good clinical educator.' (S17) (Educator-student interaction)

In the negative part of the outcome space, the expectations of clinical educators, sometimes related to participants' prior clinical experience, were found by some to be problematic. For example,

> '...some of them do, because of the job you do, just expect you to know certain things.' (S10) (Expectations and responsibility)

Findings in other parts of the study also identified that employment experience could have negative, as well as positive effects (Table 5.3b Appendix 6 p. 292). For example,

> 'I think they overestimate you. 'You're an assistant, you must know all this'.' (I5 S8) (Educators' expectations)

A similar pattern of both positive and negative consequences of the nature and scope of student–educator interaction was also identified by Jackson (2003). This suggests that this is a general issue within this part-time group, but lack of similar studies on students undertaking full-time programmes prohibits identification of whether this is the case for other students.

Although the responsibilities which older students might have in their lives could create external pressures, those identified as a negative influence (Table 7.2 b Appendix 6 p. 309) could have been experienced by younger students too. For example,

> '...the travelling was absolutely killing...' (S7) (External pressures)

Overall, responses to this question identified that both direct involvement with patients and appropriate support and input from their clinical educators were important for their learning. Although it is possible that these elements would be of equal importance to students from traditional backgrounds, a lack of literature prevents comparison. The participants' prior clinical experience had negative as well as positive effects. This characteristic is distinctive in these students and potentially of great advantage to them. The nature of many of the negative responses suggests that these could potentially be addressed by optimising communication between clinical educators and students.

Influences of programme design

The categories of description relating to programme design and their representative quotations are presented in Table 7.3b (Appendix 6 p. 312). All the categories which emerged from the data represented desirable behaviours. The absence of undesirable findings may suggest that the programme design was successful in what it had been designed to achieve. The number of responses is identified in Table 7.3a. The categories of description were not hierarchically related.

Table 7.3a Programme influences on learning

Categories of description	Interview 4 (15)	Interview 5 (13)
Self-directed study	4	
Essay requirements		1
Literature evaluation	1	7
Broad resource base	2	2
Sharing ideas	1	
Questioning		1
Familiarity with learning activities		1
Planning and writing skills	1	
Time management	2	
Interest in learning	1	1

Acquisition and honing of a number of the intellectual skills required for effective professional practice were identified. The presence of self-directed learning in the outcome space was a fundamental purpose of the programme, particularly in the latter parts, when these interviews took place. For example,

> '...there's a lot more doing things for yourself.' (I4 S5)
> (Self-directed study)

A number of the categories of description reflected not just the participants' recognition and acceptance of both questioning and evaluating of information,

but utilisation of these behaviours, and employment of a wide number of sources of information. For example,

> 'I'm more analytical...' (I5 S10) (Literature evaluation)
> 'I'm using more journal articles and looking for research and perhaps wider sources.' (I5 S14) (Broad resource base)

It is such attitudes and actions which are necessary for successful clinical practice.

The outcome space for this research focus suggests that, towards the latter stages of their course at least, participants' learning behaviours were at a deep level, with a focus on analysis and synthesis, rather than focussing on acquiring factual detail in an unquestioning way. This finding supports the desire stated by Radloff et al. (1999) that studying and learning should involve use of a 'self-regulatory metacognitive framework' (p. 1).

Table 7.3a and Table 7.3b (Appendix 6 p. 312) also identify that relevant practical and operational skills like writing and time management had also improved as a result of undertaking the programme.

Measures to improve the programme

The categories of description which emerged from the data and their representative quotations relating to improving the programme are presented in Table 7.4b (Appendix 6 p. 314). Responses to this question fell into two broad groups – design and operation – and the categories of description are presented under these headings. The frequency of responses summarised in Table 7.4a identifies that the majority of issues related to programme design.

A hierarchical relationship among the categories was not found.

Table 7.4a Measures to improve programme

Categories of description	Interview 4 (15)	Interview 5 (13)
Design		
Clinical placement timing	6	4
Practical learning timing	4	5
Assessment timing	4	
Assessment formats	1	
Workload		2
Attendance/study time	1	1
Operation		
Content coverage	1	
Content relevance	1	
Directed tutorials	2	
E-mail system	1	

The participants' responses provided valuable feedback for the programme team. Most responses concerned timing of learning and assessment activities. For example,

> '...move one of the [clinical] placements into the third year...' (I4 S17) (Clinical placement timing)
> ...there's a lot of assessment due in together...' (I4 S15) (Assessment timing)

The importance of responding promptly to such negative feedback and suggestions for improvement, as staff on the physiotherapy programme did, is supported by the research undertaken by van der Hulst and Jansen (2002). They investigated the relationship between a number of curricular elements and academic progress, of 1,578 engineering students. The study found that factors like the number of units being undertaken at one time and the volume and timing of assessment influenced student achievement.

Overall, despite identification of some problematic areas, the findings from the current study suggest that participants were largely comfortable with the programme design and delivery.

Research activity

Students were questioned about the research activity module in the final set of interviews, after they had submitted their research reports. Two assessment formats were available to students, a literature review or a quantitative or qualitative study involving data collection and analysis. Three of the thirteen students who took part in the Stage 5 interviews undertook a literature review.

Intentions

Table 7.5b (Appendix 6 p. 317) displays the categories of description relating to participant's intentions towards the research activity, and the representative quotations. The number of responses in each category is presented in Table 7.5a.

Table 7.5a Research activity – intentions

Categories of description	Interview 5 (13)
Complete the task	1
Pass	1
Produce good work	1
Learn about process	4
Produce useful results	4
Learn about topic	9

Hierarchical relationships were present only among the first three of the six categories of description the outcome space. Passing requires task

completion and good work would involve achievement of more than just a pass.

The outcome space in Table 7.4b (Appendix 6 p. 314) indicates that the majority of respondents indicated intentions to gain something useful from the experience and not just to pass the assessment. For example,

> 'I wanted to increase my knowledge of the research process.' (S16) (Learn about process)
> '...more interesting because I could get something [useful results] out of it.' (S15) (Produce useful results)
> '...trying to learn about the topic I was writing about...' (S1) (Learn about topic)

This finding reflects the participants' responses regarding their intentions relating to assessment in general (Tables 8.1a and 8.1b, Appendix 6 p. 325). For example,

> 'I wanted to do something that I didn't really know a lot about... (I1 S9) (New learning)

This outcome indicates that most of the participants were positive in their attitude to the research activity. Existing literature on conceptions of research by Meyer and colleagues (Kiley and Mullins, 2001; Meyer, 2001; Meyer et al., 2001) identified the conceptions of research of 154 honours and postgraduate students across a range of disciplines from two countries. Five psychometrically robust conceptions were identified:

- Misconceptions about research
- Research viewed as re-search (re-examination of existing knowledge)
- Research as exploration, discovery and insight
- Research as finding out the truth
- Research as finding solutions to problems

The quotations included under each proposed conception by Meyer (2001), suggest some similarities between these and the intentions identified in the current study. The 'Exploration, discovery and insight' conception resonates to some extent with the 'Learn about topic' category from the current study. For example,

> '...I wanted to find out about it...there was a bit of debate on it where I work...' (S7)

There is also possibly a weak association between Meyer's 'Problem solving' conception and the 'Produce useful results' from the current study insofar as both embody the idea of something useful, a solution, being the outcome. For example,

> 'I chose a topic that is something I am currently involved in...so that I can implement what I've looked at.' (S12)

In contrast, Brew's (2001) phenomenographic investigation into the conceptions of research of 57 experienced and senior researchers identified four conceptions, none of which matches those identified in the current study, perhaps because of the wide experiential distance between undergraduate students and senior researchers.

The presence of some overlap between intentions identified in the current study and students' conceptions of research identified by Meyer and colleagues may allow some comparisons to be made. However, until research specifically into students' intentions towards undertaking research is undertaken, it is not possible to draw any conclusions.

Influences on learning

The categories of description and representative quotations presented in Table 7.6b (Appendix 6 p. 319) identify that responses to the two questions about positive and negative influences on learning were almost all operational.

Table 7.6a illustrates that there were more positive than negative responses across the outcome space.

Table 7.6a Research activity – influences on learning

Categories of description	Interview 5 (13)
Positive	
Resources	2
Support	1
Supervision	7
Learning opportunity	1
Procedural factors	3
Evaluation skills	2
Efficiency	3
Negative	
Research novice	2
Procedural factors	9
Supervision	1
Temporal factors	2

In addition, the larger number of categories of description was in the positive grouping. For example,

> '...access for resources was very good...' (S2) (Resources)
> '...support from the supervisor...' (S3) (Supervision)
> 'I enjoyed writing the questionnaire...collating the date.' (S15) (Procedural factors)
> '...evaluating the articles.' (S1) (Evaluation skills)

However, a number of the participants found either part or all of the experience challenging. For example,

'I'd underestimated how difficult doing a literature review would be.' (S5) (Procedural factors)
'The ethics took so long…it was quite frustrating.' (S8) (Procedural factors)

Many of the difficulties described in Table 7.6b (Appendix 6 p. 319) were directly associated with the practicalities of undertaking research and could not have been prevented. Absence of comparative data prevents identification of whether the process is less challenging for students with traditional academic backgrounds.

Learning from the experience

Despite the finding that many of the participants found the research experience challenging, the large number of positive categories of description identified from the responses to the question about learning from the research experience (Table 7.7b Appendix 6 p. 322) suggests that most gained much from undertaking the research activity. Table 7.7a identifies that more than two-thirds of responses were positive.

Table 7.7a Research activity – learning from the experience

Categories of description	Interview 5 (13)
Positive	
Research process	
Topic specificity	1
Literature evaluation	1
Practical aspects	1
Research knowledge	1
Research process	1
Organisation and time management	4
Writing skills	1
Outcomes	
Achievement	1
Learning	3
Positive results	2
Clinical relevance	2
Enjoy research	5

Respect researchers	1
Negative	
Research process	
Statistics	2
Writing report	2
Outcomes	
Future research involvement	3

Although nine participants stated that they found the research process difficult (Table 7.6a Negative - 'Procedural factors'), only two of these stated that they would not want to be involved in research in the future. For example,

> 'It's not something I'd like to go into.' (S14)
> (Future research involvement)

On the other hand, four of the same nine actually stated that they enjoyed doing research, despite its challenges. For example,

> 'I did enjoy a lot of it.' (S8) (Enjoy research)

The strongly positive feedback from the participants suggested that they were able to manage the honours element of a degree programme. The marks for this module were unknown at the time of interviewing, so could not have influenced their perceptions.

Overall, the participants identified that, despite the challenges involved in undertaking the research activity, they found it a valuable learning experience. This outcome might have been facilitated by their largely positive attitudes towards the activity and its assessment.

Summary

Four varied elements relating to curriculum design were explored in the study. Of the three categories of description identified regarding the desired role of the tutor, two ('Facilitator and guide, and 'A resource') indicated support for the student-centred approach followed on the programme.

A number of positive and negative factors which influenced their learning on clinical placements were identified by participants. They particularly valued appropriate levels of both direct involvement with patients and interaction with their clinical educators. However, these factors were identified negatively if patient contact was insufficient, or if interaction with educators was perceived to be insufficient or excessive. Although participants' prior clinical experience was viewed positively by some in relation to the programme, others found that it resulted in high expectations which interfered with their learning as students.

All the responses to the question regarding influences of the programme on participants' learning were associated with desirable outcomes. Many were relevant to the intellectual requirements for successful professional practice, while others were important for associated practical skills. This outcome suggests that the programme had been successful in what it had set out to achieve. Despite this, participants did identify some aspects of the programme design and operation which could be improved. The underlying concern was one of a need for balance, both in the content covered over time and the timing of assessment demands of the programme.

The research activity is an academically challenging and time-consuming element of the programme. Participants' stated intentions towards the research activity identified that they wanted to learn from the process, not just pass the assessment. Although they did identify a number of aspects of the experience which were positive for their learning, many also found the process challenging. Despite this, the majority felt positive about what they had learned about the research process and its outcomes.

Chapter 8

Results and discussion

Assessment

The assessment element of the fourth research question is considered in this chapter. Two areas considered in the study are addressed: intentions, processes and learning from assessment experiences, and the influence of grades and feedback.

Assessment

Intentions

The categories of description which form the outcomes space for questions asked concerning participants' intentions towards assessment activities are presented in Table 8.1b (Appendix 6 p. 325). As the examination which tested practical assessment and treatment skills had not been undertaken before the first interviews, responses relating to this were only present for the second interviews. The representative quotations identify that the focus in six of the eight categories was on learning, with only the first two, 'Pass' and 'Perform well' referring to performance.

Hierarchical relationships were found between the first two categories, but none across the whole outcome space. As for intentions towards the research activity (Table 7.5b Appendix 6 p.317), passing is a pre-requisite for

performing well. A hierarchy was also present between the 'New learning' and 'Clinical use' categories, with the latter including a temporal application component which the former did not.

The presence of responses in almost all the categories of description (Table 8.1a) on both interview occasions suggests overall temporal stability.

Table 8.1a Assessment - intentions

Categories of description	Interview 1 (17)	Interview 2 (16)
Pass	12	9
Perform well	6	1
Practical skills		10
Learn everything	2	3
Consolidate knowledge		6
New learning	3	
Clinical use	12	8
Understanding	12	11

There is an extensive literature on the nature of assessment and the influences which different formats can have on students' approaches to preparing for assessment. However, no studies into learners' intentions regarding assessment were found. Elton (1988; 1996) has proposed a model which describes the motivations of students relating to assessment as either extrinsic or intrinsic. The former focuses on aiming to pass assessments, a less desirable intention than the intrinsic form, which describes a motivation driven by a desire to learn. As for the literature regarding other aspects of motivation, these descriptions align with surface and deep approaches to learning. The outcome space presented in Table 8.1b (Appendix 6 p.325)

appears to support Elton's assertion of the existence of extrinsic and intrinsic motivation in students.

The presence of an intention, in the current study, to pass assessment (Table 8.1a) is not unexpected (Elton, 1988; 1996). The wish by some participants to perform well suggests that some believed, however, that they were able to achieve more than just a pass. Although category 3 (Practical skills) refers to only one piece of assessment, the purpose of achieving a high level of skill rather than just sufficient to pass can be seen in the representative quotations (Table 8.1b Appendix 6 p. 325) For example,

> '...to be able to perform techniques correctly...be confident what I'm doing.' (I2 S4)

This finding suggests a higher level of intention.

The representative quotations in the final three categories all indicate that these were high order intentions which looked at assessment as an opportunity for useful learning which had value beyond its use for assessment purposes. For example,

> 'I wanted to do something that I didn't really know a lot about...' (I1 S9) (New learning)
> ''...to be able to use the skills later on...' (I1 S14) (Clinical use)
> '...you just want a better understanding...' (I1 S10) (Understanding)

The large number of responses in these categories on both occasions (Table 8.1a) supports an interpretation that many of the participants regarded assessment not just as a hurdle to be cleared, but as an opportunity to achieve learning of a kind which was lasting, usable and of value over time.

The picture is less clear for the two preceding categories of description. Only one of the respondents in 'Learn everything' stated overtly that the purpose underlying this intention was strategic:

> 'I didn't have the faintest idea what sort of questions, so I thought I'd try to do everything.' (I2 S4)

It is possible that the others with the same intention wanted to do so for assessment, rather than learning, purposes, but it is not possible to draw any conclusions. The quotations in 'Consolidating knowledge' could also be interpreted as having a focus on achievement. For example,

> '...trying to reinforce my knowledge...' (I2 S16)

However, the overall tenor of the responses from which the quotations were taken, suggested that the intention was that the learning would be of long term use.

Overall, despite the caveats considered above, the outcome space for this topic suggests higher order levels of intention among these participants.

Processes

The outcome space and representative quotations regarding the three assessment formats addressed in the first two interviews are presented in Table 8.2b (Appendix 6 p. 328). By the first set of interviews, participants had completed essays and a practical viva which tested their applied anatomy skills. Participants had undertaken unseen written and practical skills examinations by the time of the second interviews.

The results for each assessment format are presented separately. The groupings within each outcome space were determined by the nature of activities involved in undertaking each type of assessment. Because of the closeness of the nature of the assessment and responses for the viva and practical examination, the findings are presented together under the heading 'Practical exam'. No hierarchical relationships were found in any of the outcome spaces.

The frequency of responses in each of the three areas are summarised in Table 8.2a. The relevant parts of this table are included under each format heading

Essays

A notable feature of the processes of essay writing was the use of a number of sources of material by many participants (Table 8.2a).

Table 8.2a Assessment – processes (essays)

Categories of description	Interview 1 (17)
Theory – essays	
Information sources	
Libraries	9
Internet	1
Work	10
Other organisations	5
Books	12
Other students	1
Topic understanding	
Understand topic	2
Writing processes	
Content selection	4
Draft review	2
Essay plan	4
Writing procedure	1

Use of libraries and books might have been anticipated, but contacting organisations demonstrates high levels of initiative and motivation. This contrasts with Smith et al. (1999), who found that first year education students' searches for references were limited to textbooks and reading lists, without use of a library, let alone other sources of information.

It is noteworthy that many of the respondents in this study recognised the potential of their places of employment as a resource and actively utilised this. For example,

> '...I went to a cardiology department and talked to them for a long time.' (I1 S17) (Work)

Other physiotherapy students would not normally have such access and this suggests an advantage for the part-time students.

The categories of description emerging under 'Writing processes' identified a variety of approaches. Although the degree of similarity did vary, all the categories of description found in this study were also identified by Torrance et al. (2000) who investigated the strategies used by psychology students in essay-writing. Their cluster analysis produced four groups. The 'Outline and develop' and 'Detailed planning' strategies both involved a planning or outline stage followed by writing and review of draft work. These elements are reflected in the 'Content selection' and 'Draft review' categories in the current study. The category 'Essay plan' in the study is the same as Torrance et al.'s 'Minimal drafting' strategy and the 'Writing procedure' category has some similarities to their 'Think then do' strategy.

Smith et al. (1999) also revealed a mixed pattern of findings relating to the use of essay planning and writing and revision of drafts similar to that found in the current study. They suggested that the strategies used by students may be less important for the outcomes of essay writing than the nature, breadth and depth of the content included. The SOLO analysis undertaken in their study supports this assertion, but this was not investigated in sufficient depth in the current study to enable comparisons to be made or conclusions drawn.

Unseen theory examinations

Table 8.2a Assessment – processes (unseen theory examinations)

Categories of description	Interview 2 (16)
Theory- unseen exams	
Reading	
Books and notes	9
Revision notes	10
Cover everything	1
Existing questions	
Review tutorial questions	3
Read past papers	2
Practise past papers	8
Utilised others	
Talked to others	1

As for essay writing, the findings relating to the questions on the unseen examinations demonstrated that participants did more than just read or write revision notes as preparation. Ten of the sixteen participants in the second interview (Table 8.2c Appendix 6 p. 332) made use, to some extent, of resources which reflected the sort of questions which they would encounter in the examination. For example,

> 'I did go thorough all the tutorial questions.' (I2 S16) (Review tutorial questions)
> 'I do look at them and find them useful.' (I2 S14) (Read past papers)

'...past exam papers...to get used to doing the actual exam papers.' (I2 S7) (Practise past papers)

Use of tutorial questions was appropriate, as the same format was used in these as was used in the examination questions. The large number of participants who actually practised answering past questions may reflect the difficulties they had experienced previously with this assessment format.

Practical examinations

The practical examinations had two requirements – theoretical knowledge and understanding, and practical skills performance – and the outcome space for this format reflects this. The presence of responses at both interviews for many of the categories of description (Table 8,2a) suggests that processes followed in the first practical examination were successful and, thus, utilised subsequently.

Table 8.2a Assessment – processes (practical examinations)

Categories of description	Interview 1 (17)	Interview 2 (16)
Practical exams		
Theory element		
Reading		
Read		8
Revision aids		
Diagrams	4	
Revised notes	4	4
Made notes	5	10
Revision timetable	1	
Utilised others		
Work colleagues	1	2
Collaborative learning	2	5
Knowledge tested	4	
Practical element		
Practice		
On others	11	14
On equipment	10	8
Visualisation		
Process visualisation		1

As might be anticipated, the processes followed for the theoretical elements were similar to those used during preparation for the theory examination. However, it is notable that much greater use was made of interaction with others in preparation for the practical examinations. The nature of the practical skills in physiotherapy makes practice on others and with equipment appropriate, and it appears that the involvement with others provided an environment in which the theoretical aspects could also be revised. The quotations for the 'Practised on others' category (Table 8.2b Appendix 6 p. 328) indicate that the participants made use of a wide range of people, not just fellow students. For example,

> ''I always question people at work...' (I2 S9) (Work colleagues)
> '...when I was around people I got my girlfriend and my family to test me...' (I1 S14) (Knowledge tested)

This, again, demonstrated a high level of initiative and optimal utilisation of opportunities. The presence of responses in most categories of description for both examinations which involved practical elements suggested that the participants found their strategies to be effective over time.

Learning from assessment experiences

The categories of description and representative quotations relating to assessment experiences are summarised in Table 8.3b (Appendix 6 p. 334). Responses in relation to six different assessment formats experienced one or more times are presented separately. As for assessment processes, the groupings within each outcome space were determined by the nature of activities involved in undertaking each type of assessment. Issues arising

from the group work involved in some of the assessments are also included at the end of the table. No hierarchical relationships were found in any of the outcome spaces.

Table 8.3a summarises the number of responses in each of the seven areas. The relevant parts of this table are included under each assessment format heading, and that relating to group work.

Verbal presentations

Participants' responses referred to factors associated with either the preparation for or execution of verbal presentations. The number of responses for each category of description is presented in Table 8.3a. The smaller number of issues raised in the final set of interviews suggests that participants had learned usefully from their previous experiences.

Table 8.3a Learning from assessment experiences (verbal presentations)

Categories of description	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Verbal presentations			
Preparation			
Content			
Topic selection	1	1	
Topic knowledge	7		
Focussed information	7	4	
Interesting information	2		
Visual aids			
Volume	1		1
Format	5	3	6
Design			1
Preparation			
Organisation	2		
Practice	5	2	
Tutor feedback			1
Time management			3
Time consuming	1		
Prior experience			
Useful		3	2
No changes		1	
Accessing information		1	
Information management		3	
Execution			
Verbal presentation issues			
Prompt material			1
Presentation style	1		3
Read presentation	1	2	2
Speed of delivery	1	1	1
Clarity of delivery		5	1
Interaction with audience			
Acting	1		
Discussion generation	1		
Prior experience			
Confident		4	1
Competent	3		
General			
Challenging	6		

Many of the lessons learned for both preparation and execution were the same as or similar to those found in the study by Hounsell and McCune (2003). Their group interviews with 39 third and fourth year students identified two main themes – 'Sense of audience' and 'Learning to present' – which

were also present in the current study. The paper focussed only on the second element, preventing direct comparison of findings across the two studies for the other theme. However, Table 8.3a and Table 8.3b (Appendix 6 p. 334) suggest that several of the categories of description found in the current study identify that the audience was one of the participants' considerations in both preparation for and delivery of the presentation – 'Interesting information', 'Volume (visual aids)', 'Design (visual aids)' , 'Presentation style', 'Acting', 'Discussion generation' and 'Challenging [experience]'.

In the current study, the categories of description associated with prior experience identified that the impact of experience was positive, while, in Hounsell and McCune's study, they were mixed. Only one student in the current study stated that they sought feedback from tutors while preparing for their presentation. Students knew that tutors were always willing to provide support, if needed. The limited apparent use of this resource suggests that they either did not feel a need for guidance in addition to that which had already been provided in their assessment briefs, or that they obtained adequate support and guidance from other sources, eg. their peers. Although some respondents in the study did state that they had learned the value of practising their presentation in advance, they did not identify whether this involved an audience.

The stresses involved in giving the talk were also identified by some participants in this study in the 'Challenging' category. For example,

'I was very...very nervous...and was shaking like mad...' (3 S17)

The pressure associated with having to be able to answer questions in addition to making the presentation itself found by Hounsell and McCune (2003) was also identified in the study. For example,

'...because people were going to ask questions I knew I had to look in obviously a bit deeper into what I was dong...' (I3 S3) (Topic knowledge)

Table 8.3a illustrates that this issue was only identified after the participants' first assessed presentation. Its absence later on suggests that this lesson had been learned.

Hounsell and McCune found feedback on presentations to be a particular influence. In contrast, although students on the part-time programme were given written peer and/or tutor feedback after presentations, this was not identified specifically in the current study, except in the 'Clarity of delivery' category. It is possible that other responses also reflected feedback received eg. 'Speed of delivery', 'Presentation style'. The potential to learn from others' presentation was also identified in the study in the 'Confident' category.

The 'Personal styles of presenting' influence found by Hounsell and McCune (2003) is defined as the net outcome of the impact of all the previous influences. Although not identified as such in the current study, a number of categories of description did reflect participants' personal characteristics with regard to presenting. These included issues relating to time management and

organisation, pace and clarity of delivery and the confidence to present without reading from a script. For example,

> '...be much more organised...' (I3 S13) (Organisation)
> 'I talk too fast.' (I5 S2) (Speed of delivery)
> '...feedback from before...to raise my voice and speak more clearly.' (I4 S1) (Clarity of delivery)

Quotations in Table 8.3b (Appendix 6 p. 334) identify that, while some participants were able to manage these positively over time, others were not. For example,

> '...I know I read off the sheet...I don't feel I'll ever change.' (I4 S2) (Read presentation)

Other factors were found in the current study which Hounsell and McCune did not identify. One was the need for and challenge involved in selecting the limited amount of information which the time available for presentation allowed. For example,

> '...being more precise in my content really...' (I4 S12) (Focussed information)

There was no response in this category in the final set of interviews, suggesting that participants were managing this important aspect.

The use of more advanced presentation methods over time by a number of participants illustrated a developmental element associated with experience. For example,

> 'I was determined to use PowerPoint to make sure that I could actually do it.' (I4 S8) (Format)

The desire to use PowerPoint was motivated by personal challenge, as only the content of visual aids, not their technical complexity or visual variety, was marked.

Unseen written examinations

All unseen written examinations took place during the first two years of the programme, and this format was not addressed in the later two interviews. Responses were made regarding both preparation and execution (Table 8.3a).

Table 8.3a Learning from assessment experiences (unseen written examinations)

Categories of description	Interview 3 (17)
Unseen examinations	
Preparation	
Prior experience	
No change	1
Useful	1
Others	
Time management	4
Knowledge	1
Revision notes	5
Existing questions	7
Tutor assistance	2
Execution	
Focus	1
Answer plans	1
Time management	1

The outcome space in Table 8.3a provides information on the actual writing of the papers, which the data in Table 8.2a does not. However, there are many similarities in what participants stated they had done in preparation for the first unseen paper and how that experience had influenced preparation for the second set of unseen examinations. This suggests that many earlier

strategies were successful, a conclusion stated by some participants in the 'Prior experience' grouping. For example,

> 'I think I was more prepared for the second one, I knew what to expect....I had a rough idea about the questions.' (I3 S4)

One additional category in Table 8.3a is that of seeking tutor assistance. For example,

> 'The tutors helped me a lot.' (I3 S7)

The availability of staff support with revision and writing strategies had been emphasised on both occasions and it is possible that the experience and outcomes of writing the first examination identified the advantages of using this resource.

Although three categories of description were found concerning writing examinations, the small number of responses informing each category suggests that the majority of participants, despite negative prior experiences with unseen written examinations, felt they had managed the process successfully.

Poster presentations

Table 8,3a identifies that there was limited similarity in the categories of description for learning from preparing the two poster presentations.

Table 8.3a Learning from assessment experiences (poster presentations)

Categories of description	Interview 3 (17)	Interview 5 (13)
Poster presentations		
Prior experience		2
Content selection	2	1
Presentation style	2	8
Time management		1
Time consuming	1	
Learning opportunity	13	
Cost efficiency	1	

There were a large number of responses in the 'Learning opportunity' category after the first poster presentation, but none for the second. This finding possibly reflects differences in the topic. The first was on back pain and management, a core topic within physiotherapy, while the second poster was on the role of physiotherapy in different health settings, a more general and less 'hands-on' area from which more limited factual information could perhaps have been derived.

As for verbal presentations, participants learned the limitations imposed by the format of a poster in terms of volume of content included and style of presentation. For example,

> '...the layout, size, colour...' (I5 S8) Presentation style)
> '...you have try and put the information across in like basic, simple form... (I3 S1) (Presentation style)

Essays

Issues relating to both preparation and writing were identified by participants (Table 8.3a). Although students did submit a range of written work in the latter parts of the programme, most essays were undertaken during the earlier stages. This explains why, as for unseen examinations, this topic was only covered in the third set of interviews.

Table 8.3a Learning from assessment experiences (essays)

Categories of description	Interview 3 (17)
Essays	
Preparation	
Prior experience	
Useful	2
Not useful	1
No changes	2
Others	
Literature searching skills	5
Evaluation skills	2
Tutor assistance	1
Execution	
Planning	
Essay plans	4
Writing processes	
Practice	1
Writing procedure	1
Editing	1
Referencing skills	2

Table 8.3a and Table 8.3b (Appendix 6 p. 334) identify a number of effects of experience. Prior experience of essay writing had mixed effects among participants. A temporal improvement in literature searching and evaluation skills was found. For example,

> '...researching the material, you know where to look more.' (I3 S9) (Literature searching skills)
> '...rather than just looking...much more looking into them...comparing and seeing what each other's got to say...' (I3 S8) (Evaluation skills)

Also, in the third interview, a number of participants identified a need to write an essay plan. For example,

> 'I read the articles first and then I did the plan.' (I3 S7)

Table 8.2a identifies that use of a plan at the time of the first interview was variable.

The categories of description in Table 8.3b (Appendix 6 p. 334) all refer to improvements in the efficiency of essay writing, rather than any change in basic approaches. For example,

> 'I feel I'm definitely getting better with writing.' (I3 S3) (Practice)
> '...referencing's probably better.' (I3 S9) (Referencing skills)

This outcome supports the findings of the longitudinal elements of the studies by Torrance et al. (2000) and McCune (2004), that approaches used when writing essays are relatively stable over time, irrespective of feedback received. The findings from the current study and the literature, do, however, identify that participants are able to and do alter their actions within their preferred approach.

Practical examinations

As for other assessment formats, participants found prior experience to be an advantage in practical examinations. For example,

> '...a lot calmer on the second one...' (I4 S2) (Useful)

Table 8.3b (Appendix 6 p. 334) identifies the importance of practising skills with and on others and also demonstrated that participants were using some appropriate strategies from the start. For example,

> 'I practised a lot more...I got people at work, people at home as patients...' (I4 S16) (Practice)
> 'I did the same thing, had cue cards...' (I4 S17) (No change)

The number of responses summarised in Table 8.3a confirms that many participants identified theses issues.

Table 8.3a Learning from assessment experiences (practical examinations)

Categories of description	Interview 4 (15)
Practical examinations	
Prior experience	
Useful	7
No change	4
Others	
Practice	9
Theory revision	2

Some participants stated that they had needed to devote more time to revision of theory. For example,

'I really did a lot more revision...' (I4 S8)

This finding might have reflected the increased theoretical elements which were examined in the second practical examination, demonstrating sensitivity to the demands of individual assessments.

Open-book examinations

Two open-book examinations were undertaken, one each before the fourth and fifth set of interviews. In this examination, students knew the topic areas which would be covered in the examination, but did not know the actual questions. They were required to collect, read and collate relevant literature in advance. They were allowed to bring all this information into the examination with them and use it to write referenced essays within three hours. It was a format with which none of the participants had prior experience, and they were given much advice by staff as well as the opportunity to write a mock paper.

All the responses regarding this format referred to preparation and not the writing of the examination (Table 8.3b (Appendix 6 p. 334). The number of responses in each category of description are summarised in Table 8.3a.

Table 8.3a Learning from assessment experiences (open book examinations)

Categories of description	Interview 4 (15)	Interview 5 (13)
Open book examination		
Preparation		
General		
More preparation	7	1
No change	3	6
Reading		
Literature	3	1
Question prediction	2	
Organisation of material		
Volume	2	
Organisation	2	2
Others		
Practice	1	
Discussion	1	1
Learning facilitation	1	
Topic knowledge		1

The outcome space for this assessment indicates that lack of experience led to insufficient preparation by some participants. For example,

> '...I may sort of prepare perhaps a bit more in advance.' (I4 S14) (More preparation)

However, the low response for this in the later interview suggests that the participants had learned this lesson and responded appropriately. The smaller number of categories of description and smaller number of responses in relation to this suggests a similar effect with regard to the more specific preparation factors.

Group work in assessment

Group work was involved in one verbal and one poster presentation. This arrangement was included in some assessments in order to familiarise students with some of the issues involved in teamwork, a working arrangement found in clinical practice. The categories of description and representative quotations are presented in Table 8.3b (Appendix 6 p. 334). Participants' responses to questions about their experiences of preparing and presenting assessment with others identified both positive and negative elements. Table 8.3a identifies the frequency of responses in each category of description.

Table 8.3a Learning from assessment experiences (group work)

Categories of description	Interview 3 (17)	Interview 4 (15)
Group work		
Organisation	5	10
Group dynamics	12	10
Teamwork	2	
Responsibility	2	2
Compromise	1	2
Group input	2	12

Jacques (2000) stated that, despite the importance of students learning and being assessed together, the process is often a difficult one, particularly concerning the assessment element. Although Jacques provided no research evidence to support this assertion, the identification of tensions in the current study reflected this. The participants in the study identified both logistic and interpersonal issues.

A mixed picture emerged concerning interpersonal factors. The 'Group dynamics' category indicated that experiences were successful when group

members felt comfortable with each other and contributions were equal, but problematic when people did not have the same priorities and/or did not pull together. For example,

> '...I knew them and I felt comfortable with them.' I3 S9)
> '...there were certain people in our group that weren't putting in as much work as others....' (I3 S15)

Individual participants also had differing feelings towards being responsible for and answerable to others, and similar tensions also existed around the need for compromise, which was common in group work. For example,

> 'I don't like being responsible for others' marks and I don't like them being responsible for mine.' (I4 S5) (Responsibility)
> '...when it's everyone else, you have to take on board everyone else's ideas...' (I4 S3) (Compromise)

Although there is much literature on group work as a means of learning, particularly in problem-based learning, little was found which investigated this process when it took place as part of assessment, a conclusion supported by Lejk et al. (1997).

The presence of the negative aspects of group work identified above was also found by Heathfield (1999) in his investigation into students of youth and community studies. He noted their presence despite the programme being focussed on working in groups and learning about managing challenging issues. The presence of these tensions among the physiotherapy students reflected these findings. Overall, however, more advantages than disadvantages were identified in the current study. A large number of respondents found the support available from group members and the

benefits of ideas and contributions from others a positive feature. For example, from the 'Group input' category,

> '...helpful to have support from the team...' (I4 S1)
> 'It's always nice to get other people's feedback.' (I4 S10)

However, the negative aspects which group work could have for learning need to be borne in mind. Heathfield (1999) described the process which occurs in group assessment as one of 'competitive co-operation'. It is for this reason that only some assessment on the programme involved group work and the remainder was based on individual work. In order to recognise variation in student ability and effort, individual elements were also included within the assessments involving group work, an approach supported by Jacques (2000) and also found by Lejk et al. (1997) to be the most popular approach used in his survey of approaches used to assess group work in computing in the UK.

The findings from the current study support the assertion by Lejk et al. (1999) that almost all the stated benefits of group work refer to the experience of working and learning in groups, rather than what is being worked on by the group. Eley et al. (2004), exploring group involvement, contributions and learning achieved at the individual level, provided empirical support for this argument. They concluded that marks associated with group assessment activities assess the group work process more than the learning of individual students. Although strategies used on the physiotherapy programme to address these issues have been described, it is an area which still requires further consideration.

The central position of approaches to learning in relation to learning outcomes recognised and addressed in other parts of the current study suggests that it would have been useful if motivations concerning group assessment activities had been investigated in addition to procedural factors. Yan and Kember (2004) identified an association between approaches to group work and approaches to learning. 'Engager' groups focussed on achieving understanding of material, a motivation associated with a deep approach to learning. In contrast, 'avoider' groups collaborated in order to share tasks and complete them with least effort, behaviour which Yan and Kember state reflects a surface approach to learning.

Despite some areas of weakness, overall, review of the findings relating to the processes involved in assessment identified that participants' stated actions and activities appeared to be of the kind which the literature links with achievement of high quality learning outcomes. There is also evidence that participants learned from their assessment experiences and that this influenced subsequent assessment positively.

Performance evaluation

Influence of grades

The six categories of description and representative quotations relating to the influence of grades are presented in Table 8.4b (Appendix 6 p. 349). They include a mixed range of responses, with some identifying grades as useful, for various reasons, while others did not recognise an influence.

A hierarchical relationship was found among the first three categories of description, but not for the whole outcome space (Table 8.4b Appendix 6 p. 349). Seeking to pass only involves a lower order and smaller scale of ambition than the importance of receiving grades identified in the second category. Similarly, working strategically for grades, as identified in the third category, is a more complex conception than valuing grades as such.

The frequency of responses is summarised in Table 8.4a. It is notable that the largest number of responses related to grades being a source of feedback.

Table 8.4a Influence of grades

Categories of description	Interview 3 (17)
Passing priority	8
Grades a factor	8
Work strategically	4
Best work priority	5
Feedback on performance	11
Add pressure	1

Some of the categories identified in the study have also been found in other investigations, but none has identified them all. Participants in the study by Shreeve et al. (2004) identified that grades allowed for comparison of the level achieved to the amount of effort put into the assessment activity. This finding formed part of the lowest order 'Correction conception' of the three identified. It focused on short-term achievement, with no desire to learn from the experience (Shreeve et al., 2004). Similar findings around effort and working strategically were also found in the current study. A third of respondents

identified that use of grades influenced them. Of these, some related effort to achievement, as in the Shreeve et al. (2004) study. For example,

> 'I like getting grades. I think you work harder.' (S6) (Grades a factor)

Two participants stated directly that they worked strategically in order to do as well as possible. For example,

> 'I will always answer an essay according to what I know the marker is wanting to see.' (S5) (Work strategically)

Others linked grades with motivational consequences which had future effects. For example,

> '...it helps with your motivation...because you get your grades through and you look at what you've got and you try to keep to that standard.' (S11) (Grades a factor)

It is interesting to note (Table 8.4c Appendix 6 p. 350) that all five participants who stated that they worked to the best of their ability, but not to enhance grades also stated that grades did matter to them. This suggests that use of a grading system may, in fact, influence effort. There was no non-graded assessment on the programme, so the influence of absence of grades is unknown. The strong response in favour of use of a grading system would suggest that this would not have a positive effect.

The majority of participants in the current study stated that they preferred use of a grading system to an alternative, for instance a pass/fail option, as it provided them with useful feedback regarding their level of achievement. For example,

> '...it gives me feedback, how I did...' (S4) (Feedback

on performance)

The value of grades as a means of measuring progress or performance was also found in the study by McCune (McCune and Entwistle, 1999; McCune, 2004). Neither this study nor McCune's identified the negative effects on motivation and self-confidence which were reported by James (2000). As self-confidence has been identified to be important for students from weaker academic backgrounds (Wilson, 1997; Osborne et al., 2004), I should perhaps also have explored the impact of poor grades.

The findings from other studies provide evidence that the perceptions held by participants in the current study were not unique, but they did not capture the whole spectrum of responses I found. This might partly reflect grades being investigated in different ways in each study.

Influence of feedback

Although a general question was asked about feedback in the study, the responses suggested that participants answered this question in relation to feedback on essays. This is not surprising, as this was the assessment format on which they received written feedback. Verbal feedback was offered, by personal tutors, on performance in unseen written and practical examinations, but was only given if students requested it, unless failure had occurred.

Table 8.5b (Appendix 6 p. 351) presents the outcome space and representative quotations regarding feedback. The four categories of

description describe a range of perceptions, demonstrating varying degrees of value ascribed to feedback.

As for grades, there were some hierarchical relationships between some categories of description: while Category 2 only refers to feedback being read, Category 3 also includes its use in the future.

The majority (Table 8.5a) stated that they both read feedback and carried it forward to future assessment. For example,

'...I try and use it as constructive criticism...' (S8)

Table 8.5a Influence of feedback

Categories of description	Interview 3 (17)
Feedback on draft work	1
Formal feedback read	3
Formal feedback read and followed	15
Tutor clarification	1

The universal use of feedback in the current study contrasts with that of Shreeve et al. (2004), where feedback formed part of only one of the three identified conceptions, 'Developmental conception'. However, it is unclear whether feedback, in Shreeve's study, was specifically raised by the interviewer, as I did in the current study. The nature of the perception of feedback in the Shreeve et al. study was the same as that in the 'Formal feedback read and followed' category found in this study in that it was developmental and contained a temporal focus.

McCune (McCune and Entwistle, 1999; McCune, 2004) also found that students responded to feedback given on their essays. However, she also identified that any resulting changes tended to be small in scale. Rather than this occurring because large scale changes were not needed, she stated that the overall impression obtained from the interviewees was that feedback was not given much attention. In the current study, several participants stated that they read written feedback in essays as well as the formal feedback provided on the mark sheet placed at the front of the essay on return. This suggests that they perhaps paid greater attention to written feedback than had been the case in McCune's study.

The study by Chanock (2000) is relevant to Category 4 'Tutor clarification' in the current study (Table 8.5b Appendix 6 p. 351). A questionnaire asked humanities students and staff what they understood by the statement 'Too much description, not enough analysis', which she had noted was commonly used in feedback on essays. Almost half the students did not interpret this in the same way as their tutors, suggesting that feedback was not always understood by students. McCune (2004) also identified that a few of the students in her study mentioned difficulty understanding written feedback on their essays. However, she did not address this issue further.

McCune's study also suggested that personal feedback from tutors may have more impact on student behaviour than written feedback (McCune, 2004). Only one participant in the current study stated this,

> '...I prefer feedback I get before handing it in...' (S7)
> (Feedback on draft work)

It is not clear whether the students in McCune's study sought advice before essay submission or after essay return. The concern expressed by Yorke (2003) that improvements resulting from feedback on draft work may reflect the teacher's ability and effort rather than demonstrate the student's level of achievement is a relevant one. As part of the ongoing support structure, students on the physiotherapy programme were strongly encouraged to submit draft written work for feedback before submission. To encourage parity and fairness, guidelines for staff limited their input to identifying areas that warranted or needed attention rather than provision of content. Some students, but not many, made use of this facility, possibly explaining the small number of respondents who identified this as a useful source of guidance.

Summary

Six of the eight categories of description which emerged from the data in relation to participant's intentions when undertaking assessment tasks were associated with higher order learning motivations while only two focussed on passing. This finding agrees with those for intentions towards the research activity considered in the previous chapter. Taking into account the posited influence of motivation on learning, this finding supported expectations of high levels of learning related to undertaking assessment. The findings relating to the actions and learning which participants identified across a range of assessment formats indicated that this was the case. There was consistent evidence that participants used a variety of appropriate sources during preparation and that they learned positively from their experiences of both preparing for and undertaking assessment. Overall, the findings for

assessment indicate that, although being successful was important, participants regarded the activities as a learning opportunity and their actions demonstrated that learning did take place.

A range of perceptions relating to the influence of grades was identified by participants. Some categories of description were associated with grades having a limited impact on behaviour while others valued them. Generally, however, participants identified that the use of a grading system did influence their behaviour, albeit to varying degrees. Some worked strategically to optimise grades achieved, while others used grades as a source of feedback on the level of their performance.

All participants in the study identified that they did read feedback. However, variation was found in the extent of its influence. While a small number only read it, the majority did take it forward to inform subsequent work.

Overall, the findings presented in this chapter suggest that participants in the study perceived assessment to be a learning opportunity in addition to it measuring their performance.

Chapter 9

Overview and conclusions

The present study has provided rich data on a large number of areas relevant to the learning of students undertaking a part-time physiotherapy programme. The key findings in relation to the research questions are summarised below.

1. What motivational factors influence the students at the start of the programme and how are these influenced by undertaking the programme?

A range of motivations informed participants' decisions to undertake the physiotherapy programme. These were largely intrinsic in nature, with the most commonly identified motivation being that of wanting to become a physiotherapist. This remained the dominant motivation throughout the programme. The demands of the programme and external pressures were identified as challenges to motivation by some participants as they progressed through the programme. However, the positive motivations, including progress and achievement on the programmer, were predominant throughout the four years of study.

2. What effect does undertaking the programme have on students' conceptions of the nature of learning, understanding and memorisation?

A number of conceptions of learning were identified by participants. As in other studies, these ranged from basic lower order to more complex in nature. Some, but not all, the conceptions found in this study were the same as those reported from other studies. The relationships among the categories of description were found to be complex. While some linear hierarchical relationships were found, others were not so, and a picture of multifaceted inter-relationships was identified. The two patterns which emerged from investigation into conceptions of learning over time were of limited change, despite the increasing intellectual demands of the programme, and a predominance of lower order conceptions.

As for conceptions of learning, only some of the conceptions of understanding found in the study agreed with those identified in the literature. Several categories of description were the same as for conceptions of learning. This suggests a close relationship between the two, but a paucity of literature which addresses both conceptions concurrently prevents conclusions being drawn. Temporal stability and a mixed pattern of relationships among the categories of description were also found for conceptions of understanding.

Participants' identified a number of ways in which they perceived understanding and memorisation to be related. With few exceptions, understanding was seen as necessary for useful memorisation, an order associated with higher quality learning outcomes.

3. What influences do students' life experiences have on their learning and how does this learning inform their life and employment experiences?

Although some respondents found that their prior educational experiences had prepared them for the demands of the physiotherapy programme, the majority felt that this had limited value for them. Despite this challenge, all participants completed the programme.

All participants identified a positive association between their prior and ongoing clinical experience and their learning on clinical placements. Communication skills and familiarity with the clinical environment were the factors most frequently and consistently recognised. In earlier placements, some participants experienced difficulties in their role as students, arising from them having prior clinical experience as assistants. However, this issue appears to have been largely resolved over time.

Similarly, the participants' ongoing employment during the programme was experienced as a positive opportunity to consolidate and further their learning. Some did encounter difficulties associated with the nature of their work roles in light of their growing knowledge and skills. However, although this issue was not resolved in some cases, this does not appear to have adversely influenced participants' utilisation of learning opportunities at work

4. What are the students' attitudes towards and learning from their study and assessment experiences as they progress through the programme?

Overall, participants identified that they were comfortable with the curriculum design and delivery of the physiotherapy programme. Although one of the desired role of the tutor was as a provider of information, all also identified the value of more student-centred roles for their learning. The responses given to a question on how the programme had influenced their learning were associated with desirable intellectual or skill outcomes, all of which are important for successful clinical practice. A few issues regarding the design and operation of the curriculum were identified as problematic by participants. These were largely related to evening out programme demands and maintaining a mix of practical and academic learning across the programme.

A number of positive and negative aspects of participants' experiences on clinical placements were identified as influencing their learning. Direct patient involvement and interactions between student and educators were the main issues in both groups. Perceptions in relation to these depended on the amount of patient contact and the nature and extent of student-educator interaction, respectively.

Participant's intentions towards assessment in general and the research activity in particular were explored. In both cases, the majority of categories of description identified higher order aspirations towards learning from the experiences, while only a few referred to focussing on passing assessment.

The positive intentions which participants had towards assessment appear to have been carried forward into the realities of undertaking assessment. Information sought on participants' experiences of undertaking a number of assessment tasks involving several different formats, identified that they used a range of appropriate strategies during preparation and execution of assessment activities. In addition, there was consistent evidence that they learned from their experiences and modified their strategies and behaviours, as necessary.

Responses to questions on participants' experiences of undertaking the research activity identified that most were positive, although many also stated that they found the process challenging. Despite these difficulties many identified that they had learned much from the experience and few had been put off undertaking research in the future.

Receipt of assessment grades and feedback was found to have a variety of effects on participants' motivation. Although some stated that grades were not an issue when they were undertaking assessments, overall they identified that the receipt of performance grades did influence them. While a few worked towards achieving certain grades, the majority perceived them as feedback on their levels of performance. All participants read feedback and the majority stated that they used it when undertaking subsequent assessment.

Overall, across the wide range of learning and assessment activities experienced over the four years, the students demonstrated attitudes and behaviours which the literature suggests supports achievement of the high quality learning. The focus was on making the most of learning opportunities, including assessment, in both the academic and clinical settings.

A number of general key findings emerged from the study.

Student motivations were found to have an important influence on learning behaviours and experiences. Motivation forms an integral part in the literature on approaches to learning. However, a limited literature was found which considered motivation in relation to other factors.

The longitudinal nature of the study has provided useful data on the dynamics of learning. Although academic development over time was found, the results did not support the premise of a developmental change in students' conceptions of learning over time. The temporal stability found in the level and nature of conceptions held challenges the developmental pattern proposed in the literature.

A close and complex relationship between conceptions of learning and understanding was found, suggesting that research into both conceptions may yield relevant information additional to that derived from studies which have explored them separately.

Students from non-traditional backgrounds recognised the range of opportunities which life experience afforded them and utilised these positively in their learning and performance in higher education.

Implications of the study

The study has made a contribution to addressing the dearth of published educational research in physiotherapy . The findings have provided valuable, wide-ranging feedback on the experience of undertaking this part-time physiotherapy programme. Comparison of the findings with the evidence from the educational research literature suggests that participant's experiences, attitudes and behaviours, informed by their personal characteristics and the design and delivery of the programme, should enable them to meet the demands of clinical practice.

The part-time format enabled ongoing employment, which participants identified as a positive factor for their learning. These outcomes provide support for both widening access to physiotherapy education and the provision of alternative programme formats for students from non-traditional backgrounds.

The outcomes of the study have also added knowledge to the wider research field on student learning. The findings relating to students' conceptual perceptions and their approaches to learning have tended to add to the complexities and variability already found in other research rather than help resolve it. However, they do confirm the need to continue research into these

issues, particularly consideration of the impact of contextual and disciplinary variables on students' perceptions and behaviours.

This research also adds usefully to the growing, literature on learning in students from non-traditional backgrounds. The importance of this is growing as the numbers of students from such backgrounds in higher education increases.

The findings of this and the relatively small number of other longitudinal studies into student learning support the need for further research with a temporal design which would capture the changes and developments experienced by students as they progress through their studies.

Limitations of the study

A number of factors need to be considered when interpreting the findings form this study and in planning further research. These fall into groups relating to validity and reliability, generalisability, and method.

Validity and reliability

Although my understanding of the programme's ethos and design was valuable in undertaking the study, my being one of the students' tutors might have biased responses, despite the efforts I made to minimise such an effect. These included overtly identifying this as an issue and assuring participants that their responses would have no effect on their progress on the

programme. In addition, where relevant, questions specifically sought information on negative aspects of participants' experiences.

Potential challenges to validity and reliability within phenomenographic research in general should also be borne in mind when interpreting the results. No additional sources of data were obtained to triangulate the evidence given in the interviews nor were others involved in data analysis and interpretation. Within these limitations, I consciously bracketed my existing knowledge to minimise challenges regarding the trustworthiness of the data collected and the data analysis process. Only after the categories of description had emerged from the data did I utilise my knowledge to interpret the findings and compare them with the literature. I also provided an audit trail by including detailed descriptions of all the stages involved in the sampling, data collection and data analysis.

Generalisation

Any generalisation of the findings of the study, even to other cohorts on the same programme, must be made with caution. This study only investigated students who were physiotherapy assistants and it is possible that those on the programme without this background could have responded differently. In addition, although not unusual in qualitative research, the small sample size needs to be taken into consideration. The possible impact of institutional factors on a study undertaken in one programme in one discipline in one location also needs to be borne in mind when interpreting and extrapolating the findings.

Method

Some aspects of the students' learning experiences which could have yielded useful data were not addressed. For example, intentions, processes and learning concerning clinical placement assessment were not investigated despite in-depth exploration of these issues for academic assessment.

In addition, the participants were regarded as one homogeneous group, with no consideration of the possible impact of differences in gender, age, academic background or life experience. Although this has been identified as an issue when undertaking research with students from non-traditional backgrounds, the method used in this study did not enable recognition of individual identities. While phenomenography seeks to identify variation in participants' experiences, this approach involves presenting findings at a group level, not for individual participants. The relatively small participant numbers prevented investigation of more than one group, and it was not practicable to study males and females, older and younger students, less or more clinically experienced students etc. in separate groups.

Suggestions for future research

With particular reference to this piece of research, as mentioned above, some areas addressed warrant further investigation eg. feedback on assessment, group working, while others not addressed in the study need to be explored eg. clinical placement assessment.

To broaden and enrich the picture, and evaluate and inform educational practice, it would be useful to study other groups of physiotherapy students, from both traditional and non-traditional backgrounds, in order to explore their learning experiences, using longitudinal research designs, where appropriate. The increasing prevalence of inter-professional learning and working in health also supports undertaking such research with students in related disciplines eg. occupational therapy.

At a more general level, further research is needed into the impact on learning processes and outcomes of students' motivations, the association between types of motivation and approaches to learning, and the nature of the relationship between learning and understanding.

Although useful data on these, and other topics, could be obtained from cross-sectional studies, the dynamic and temporal nature of learning in higher education supports the need for more longitudinal research designs.

From a methodological standpoint, although interviews are the predominant method of obtaining qualitative data on student learning, it is an expensive process and use of other approaches eg. focus groups may be worth considering.

Although some of these suggestions are specific, others, although derived from undertaking this study, extend beyond its initial focus. This reflects the ongoing need for research into the complex area of student learning.

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Appendix 1

Taster questionnaire

As part of research I am conducting into student learning, it would be very useful if you could answer the following questions.

Please answer the questions with reference to the first term of the course.

Your responses will remain anonymous and confidential and will have no effect on your progression through the course.

- Why do you want to gain a physiotherapy degree and how has your experience so far on the course influenced this?

- When you are studying, what do you hope to get out of it?

- How do you go about achieving these outcomes?

- How do your previous learning experiences influence your studying and learning now?

- Which of your existing study skills are useful for this course?

- Which study skills do you think you lack?

- Which aspects of the different teaching approaches you experience on the course are useful for you learning?

- How do you link your existing physiotherapy experiences with what is being taught and learned on the course?

Student name:.....

Many thanks for taking the time to answer the questions.

Jenny Morris
November 2000

Appendix 2

Covering letter

Physiotherapy
Colchester Institute

March 2001

Dear

I am undertaking research as part of a Doctor in Education programme which I am undertaking at the Institute of Education, University of London.

Thank you for agreeing to participate in interviews as part of my study which aims to explore the learning experiences of physiotherapy students with non-standard academic backgrounds ie. those who are not school leavers with high A level grades.

To date, virtually no research has been done on this topic and I am keen to add to knowledge on student learning in the hope that the results of this research will help physiotherapy educators provide appropriate learning experiences and support to so-called 'non-standard' students.

The following are the conditions associated with the research

- All information obtained will be treated in the strictest confidence
- Participant anonymity will be maintained at all times
- Participants may withdraw from the study at any time
- Taking part in the research or withdrawing from it will at no time influence participant's progress on the physiotherapy programme
- Participants are free to decline to answer questions

In addition to asking you to sign that you consent to participate in the research, I request your consent to tape record the interviews, analyse the transcriptions and use the outcomes of the analysis within the research report, maintaining confidentiality and anonymity at all times.

A member of staff at the Institute of Education is supervising and monitoring the research.

Two copies of the consent form are attached. Please sign both, keep one and return the other to me, for my records.

Many thanks.

Appendix 3

Consent form

Consent form

Title A longitudinal study of the learning orchestrations of physiotherapy students from non-standard academic backgrounds

I, ...

consent to participate in interviews being undertaken at intervals throughout the four year programme as part of research being undertaken by Jenny Morris.

The procedures and conditions have been fully explained to me.

I also consent, within the same conditions, to the interviews being tape recorded, analysed and the results of the analysis being used within the research report.

I understand that I may withdraw my consent and discontinue participation in this research at any time with no prejudice to me.

All questions have been answered to my satisfaction and I have read and understood the contents of this form

Participant.....Date.....

I have explained the research procedures in which the participant has agreed to take part.

Researcher.....Date.....

Appendix 4

Interview questions

Interview questions - stage 1

Motivation

What were your reasons for deciding to undertake the physiotherapy degree programme?

Studying

With reference to a specific recent study activity, what did you aim to get out of the activity?

With reference to the same activity, how did you go about fulfilling these aims?

With reference to working for specific recent assessment activities (viva, coursework), what did you aim to get out of the activities?

With reference to the same activities, how did you go about fulfilling these aims?

Study skills

Which study and learning skills did you have which have been useful on the course?

Which study and learning skills needed for the course did you lack?

How closely does the physiotherapy programme design match your preferred way of learning?

Past experience

With reference to your academic background, how closely did your expectations of teaching and learning on this course matches the reality of experiencing the course?

How do your past learning experience influence your studying and learning now?

How do you link your experience of life including your existing physiotherapy experience with what is being taught and learned on the course?

How do you link what you learn on the course with your clinical work?

Teaching

What do you think the role of the teacher is in learning?

What influence has the teaching on the course had on your learning?

How useful are the teaching formats you experience on the course?

Ways of knowing

How do you know you have learned something?

How do you know you understand what you have learned?

What do you think the relationship is between understanding and memorising?.

Stage 2 interviews

Interview questions

Motivation

How has a year of study influenced your motivation to study physiotherapy?

Study and assessment

With reference to guided self-study for neuroscience tutorials, what do you aim to get out of the activity?

How do you go about fulfilling these aims?

What did you aim to get out of the work you did for the OSPEs undertaken at the end of the first year?

How did you go about fulfilling these aims?

What did you aim to get out of the work you did for the written exam undertaken at the end of the first year?

How did you go about fulfilling these aims?

Clinical education

What did you want to get out of the clinical education placements?

How did you go about fulfilling these aims?

Which aspect of the clinical placements do you think best facilitated your learning?

Which aspects of the placements did least to facilitate your learning?

How did your prior clinical experience influenced your learning on the clinical placements?

What impact has your job as an assistant have on your experiences as a student on placement?

How has your clinical placement experience affected your work as an assistant?

Ways of knowing

Looking back over your first year of study, how do you know when you have learned something?

Looking back over your first year of study, how do you know you have understood what you have learned?

Looking back over your first year of study, what do you think the relationship is between understanding and memorising?

Stage 3 interviews

Interview questions

Motivation

How have your two years of study influenced your motivation to study physiotherapy?

Study and assessment

What do you think you learned from preparing for and presenting the PPD seminar?

How did your experiences with the MS1 exam influence your preparation for and writing of the NS1 and Cresp exams?

In general, what differences have you found between Level 1 and Level 2 learning?

What differences have you found between MS1 and MS2?

What differences have you found between NS1 and NS2?

How has your experience of the guided self-study for NS1 influenced your work for the NS2 and MS2 tutorials?

What do you think you learned from working for the MS2 poster presentations?

How has your experience with essay preparation and writing in MS1, PPD and Cresp influenced your essay preparation writing for MS2?

How do assessment grades influence your studying and learning?

How does the feedback on your assessments influence your studying and learning?

Clinical education

What differences have you found between Level 1 and Level 2 clinical placements?

How do you think your experience as an assistant affects or influences your experiences and learning on your clinical placements?

What were your experiences of going back to work with new learning and clinical experience ?

Ways of knowing

Looking back over your first 2 years of study, how do you know when you have learned something?

Looking back over your first 2 years of study, how do you know you have understood what you have learned?

Looking back over your first 2 years of study, what do you think the relationship is between understanding and memorising?

Stage 4 interviews

Interview questions

Motivation

How have your three years of study influenced your motivation to become a physiotherapist?

Which aspects of the course have influenced your motivation

Study and assessment

How did your experiences with the MS1 OSPE influence your preparation for the MS2 OSPE?

How did you find the inclusion of theory on pathology in the MS2 OSPE compared with the skills only focus of the MS1 OSPE?

Thinking back to your MS2, NS2 and PDP essays, how do you think your essay writing at Level 2 differed from that at Level 1?

How did your experience of the PPD seminar influence your preparation for the NS2 seminar?

How did you find the collaborative nature of the NS2 seminar in comparison with the individual PPD seminar?

How did your experience of group work for the MS2 poster influence preparation for the NS2 seminar?

What did you aim to get out of the work you did in preparation for the NS2 exam?

How did you go about fulfilling these aims?

How useful did you find the mock NS2 exam as preparation for the main exam?

How did you find the experience of writing an open book written exam?

What do you think you learned from preparation and writing of the NS2 exam?

How has undertaking a formal critical review in PDP influenced the way you read academic articles?

What do you think you learned from doing the three research activities in PDP?

How do you think writing the PDP clinical reasoning essay has or may influence your clinical practice?

How has your approach to studying changed during the course?

What aspects of the course have influenced the way you study?

What differences in the way the course is designed and run could have helped with your study and learning?

Assistant role

In comparison with your Level 1 clinical placements, how much for you think your experience as an assistant influenced your performance on your Level 2 placements?

To what extent has your physiotherapy education influenced your role as an assistant?

Ways of knowing

Looking back over your three years of study, how do you know when you have learned something?

Looking back over your three years of study, how do you know you have understood what you have learned?

Looking back over your three years of study, what do you think the relationship is between understanding and memorising?

Stage 5 interviews

Interview questions

Motivation

Which factors have positively influenced your motivation over the past four years?

Which factors have negatively influenced your motivation over the past four years?

Which aspects of the course have influenced your motivation? (ask if not answered in previous two questions)

Study and assessment

How useful did you find the overall teaching approaches used in PHCP for your learning?

How useful did you find the Inquiry-based learning (IBL) sessions for your learning in PHCP?

How did your experiences with the MS2 poster influence your preparation for the PHCP poster?

How did you find the experience of preparing and presenting an individual poster compared with a group poster?

How did your experiences with the NS2 exam influence your preparation for the PHCP exam?

How did you prepare for the PHCP exam? (ask if not answered in previous question)

How useful did you find the mock PHCP exam as preparation for the main exam?

How did you find the experience of writing the PHCP exam?

How did your experiences with presentations influence your preparation for the PHCP seminar and conference?

Do you think you would have learned more if the format had been an essay rather than a presentation? Why?

What did you aim to get out of undertaking the research activity?

Which aspects of the research activity do you think best facilitated your learning?

Which aspects of the research activity did least to facilitate your learning?

What do you think you have learned from undertaking the research activity?

General

Looking back, how has your approach to studying changed during the course?

What aspects of the course have influenced the way you study?

What differences in the way the course is designed and run could have helped with your study and learning?

Clinical

What differences have you found between Level 2 and Level 3 clinical placements?

In comparison with your Level 2 clinical placements, how much do you think your experience as an assistant has influenced your performance on your Level 3 placements?

How has your physiotherapy education influenced your role as an assistant during the past year or so?

General

Looking back, which aspects of your clinical placements do you think have best facilitated your learning?

Which aspects of the placements do you think have least facilitated your learning?

Looking back, what impact do you think your experience as an assistant has had on your experiences as a student on placement?

Ways of knowing

At this point in time, how do you know when you have learned something?

What has helped you to learn on the course?

At this point in time, how do you know you have understood what you have learned?

What has helped you to understand what you have learned on the course?

At this point in time, what do you think the relationship is between understanding and memorising?

Appendix 5

Diary

Research Diary

Friday 9 March 2001

Did a mock interview with a colleague before starting the formal interviews. Thought this would be a good idea as I have not had experience of doing this kind of interview. Turns out this was a very good idea for several reasons

- the room I had planned to use is rather noisy - found another one
- need to make a 'Do not disturb' sign to put outside the door
- needed to make sure how to work the tape recorder and know that it is recording correctly
- although I asked the questions in a less formal way than they were written down, it soon became clear that the interviewee could not give a useful answer to some. We stopped the tape to discuss this issue and identified that I needed to make the questions both more specific and related directly to activities which the student has been undertaking recently. Also, I needed to split some questions into two in order to obtain useful, clear responses

Have made the changes to the questions. This means that there are more questions than before, but based on the timing in the mock interview, one hour should still be adequate for all the topics to be covered usefully.

Friday 23 March 2001

I have done 7 interviews in the past two weeks. They feel as if they are going the way I wanted them to and that the improved question designs are eliciting the right sorts of responses. They have lasted between 40 minutes and 1 hour 15 minutes, with almost all being under 45 minutes long.

The students have been very open, as I had hoped. There is an issue associated with the fact that I am one of their tutors, but we all know one another very well and there does not appear to have been any reluctance on their part to be open in their responses.

Some have identified afterwards that they found the process of thinking about their learning interesting even though it was a new thing for them to talk about.

The information they have provided has been very interesting and I look forward to doing the detailed analysis. My overriding feeling arising out of the interviews is one of admiration and humility associated with the

extent of commitment they bring to their studies in situations where they have numerous other demands on their time. Although interest in and relevance of what they are learning is important, the amount and nature of the students' motivation seems, not unexpectedly, to be their major driving force. However, it is the extent of this drive which has emerged from the interviews done so far.

From a logistical point of view, because the students know me and I am doing the interviews in college on the days they attend classes (albeit either before or after class time) I had presumed that all the interviews would take place at the agreed time. However, two interviews have already had to be rescheduled. One no-show was a result of travel difficulties and the other was a result of the student forgetting to come, even though he was in the building! This shows that no research is immune from potential practical difficulties.

Tuesday 8 May 2001

An administrative assistant has been undertaking transcription of the first interviews for me because of time pressures. However, I took the opportunity to do one myself as I think it is valuable to have personal experience of the whole of the research process.

It was a lengthy, challenging, but informative experience. It made me realise that transcribing accurately and faithfully is not an easy task, particularly when people speak quickly or interrupt one another. From a research point of view, I found that hearing the interview objectively and not being directly involved in it helped me to 'hear' more content than I did when doing the interview. This was possibly because I did not have to think about the undertaking of the event in addition to concentrating on what the student was saying. On the basis of this perception and reading through my transcription, I think I may find the analysis is assisted by listening to the recording as well as working on the printed version. However, until I start analysing the transcripts, I will not know whether this expectation is fulfilled.

Wednesday 13 June 2001

I have just completed phenomenographic analysis of the first 6 interviews which I am using as the data for the MOE2 essay. The process of analysis was straightforward, but the experience was challenging. It was relatively easy to identify responses in the transcripts which were relevant to the questions asked. I undertook this process manually for two reasons. One was to ascertain what the manual approach would involve and the other was that, at present, I do not have easy access to an appropriate statistical package. While

undertaking the first stage of the analysis I attended the NVIVO workshop at the Institute. The timing of this was very useful in terms of my present situation. Overall, I think that NVIVO (which I shall have access to at work in due course) may have an advantage over manual coding. However, I will only know this when I have gained experience in using the package. In the meantime the manual approach is acceptable.

I found the second stage of analysis much more challenging. This involved identification of the categories of description. These need to be as small in number as possible and distinctive from each other while, at the same time accurately reflecting all the responses given by the interviewees. The main challenge was to decide on whether responses which appeared to belong to the same category did actually say the same thing. In a number of cases I had to go back to the transcripts and check the context in which responses had been made. So far, I have not taken any steps to confirm the validity of my decisions - I will discuss this with my thesis supervisor.

An unexpected emotion I felt when undertaking the analysis was a sadness or concern that the individuals who provided the data were lost in the analysis. The outcome space is separate from the interviewees and does not reflect the number of contributors to each category or the individual contexts from which the categories were derived.

Overall, having the opportunity to undertake this mini-analysis has been very useful and will inform my ongoing work on the thesis.

2 October 2001

I was interviewed by a colleague last week for her EdD thesis and found it to be a useful learning experience. Firstly, it made me realise that coming up with a quick response to questions can be quite challenging even if the topic is relevant to your experiences. This has made me realise how well my students have been responding in my interviews. Although they are talking about personal experiences, they are being asked about experiences they have probably never thought about.

The second issue which arose was a difficulty which came out of my own experience of transcribing my own interviews. Transcription had made me very aware of how incomplete normal speech is and, when I was being interviewed, I was probably not as relaxed as I should have been as I was consciously trying to present my responses clearly in full sentences. I don't know why, because obtaining information from my own interviews was not impeded by normal speech patterns and the same was likely to be true for my colleague. However, in retrospect, I

think I would have found being interviewed more relaxing if I had just focussed on the conversation and not on the later analysis. Fortunately, this is a personal issue, not one which will influence the way my interviewees respond in the next set of interviews.

14 December 2001

I finished the second set of interviews last week. Although I was aware that the students might need more time in which to answer my questions and I was consciously prepared to give them more time, this did not seem to be necessary. I deliberately set out to allow them the time they needed, but the interviews took place at a similar pace to the first set There are two possible reasons I can think of as to why they have not appeared to need more time to think before responding. Firstly, having already done one set of interviews, they will have been familiar with the nature of the interviews and the sort of questions I would be asking them. Secondly, as it was only a few months since the first interviews, the topics I was addressing were likely to be reasonably fresh in their minds.

3 April 2002

I have just completed the first stage of analysis for the interviews which I did not analyse for the MOE2 essay. A number of factors arose from this activity. Firstly, the time delay since I undertook the first set of interviews meant that I was considering the scripts in a more 'cold' way than when I did the analysis for MOE2. I felt that this made the analysis 'purer' and the relevant responses easier to identify. Apart from 1 or 2 scripts I was unable to remember who the interviewee was so my analysis was less potentially clouded by background knowledge and personal expectations.

On reading the transcripts I noticed that, at times, my questioning style tended to be leading. I have reflected on this as this could be important for future interviews. I think this is something I need to be aware of as a possible pitfall, but I think the judicious use of leading questions may be justified in a number of circumstances including

- when the question topic or focus is unfamiliar to the student, clarifying why that question is being asked may help them to provide a useful and relevant answer.
- if students are having difficulty answering questions, then taking them along the path to an answer may be helpful to them

At al times, though, it is important that any use of leading questions does not put words in their mouths and that it does not interfere with obtaining a response which is the respondent's.

I also noticed that sometimes, after questions had been answered I then explained why I had asked that question. Again I think this can be a useful tool as, providing an explanation for why a question has been asked after they have responded can help the student to understand the reasons why the questions are being asked and help maintain their interest in the interview

An additional factor of interest also started emerging out of the interviews. There were a couple of questions relating to the aims and processes involved in undertaking coursework. In order to obtain a focus I started asking which topic the students had selected from the choice they had. Consideration of this choice then led on to a few questions about why they made that selection and these had identified a number of reasons which are linked with motivation. The basis for choice related to

- personal interest
- access to relevant resources
- familiarity of topic
- unfamiliarity of topic
- relevance to work

As choice within assessment is a focus of the programme design I think that, although not all students were asked about this, this factor is worth including in the analysis as the provision of choice is important both for student motivation and learning.

Another factor which I identified during the analysis related to the questions on study skills strengths and weaknesses. The questions related to skills which students either had or did not have on entry to the course (related to their past educational experiences). Several relevant to the questions were identified. However, it also became clear in some cases that poor study methods, especially related to organisation and time management, were not a result of inexperience, but of ongoing poor use. Much of this can be linked to the other demands on the students' time. It does suggest, however, that provision of study skills support, particularly in this area, should not only be considered at the start of the course, but be an ongoing issue.

7 June 2002

I have recently completed the third set of interviews. These interviews identified something which I had not anticipated. The surprise was the level at which the students were thinking in response to the questions. When the first few interviewees demonstrated noticeable metacognitive skills, particularly, but not exclusively, in their answers to the conceptual questions on learning, understanding and memorisation, I was pleasantly surprised and thought this may only be relevant to those students. However, although the truth of this will only show up with the analysis, all the students seemed to be functioning cognitively at a higher level, albeit to different extents, than they have in the past two interviews. I have identified two possibilities for this observation. Firstly, their increasing familiarity with the sorts of questions I am asking may enable them to provide fuller answers than in the past. Secondly, if present, this higher level of thinking could reflect the higher cognitive expectations being made of them by the programme now that they are well into their Level 2 studies. Neither of these hypotheses can be specifically tested, but it will be interesting to see whether the detailed analysis supports my observations and also whether the students continue to exhibit what appears to be metacognitive processing in the last two sets of interviews. Either way, I am very encouraged by this outcome.

18 May 2004

Have completed 10 of the stage 5 interviews (3 more scheduled for late June). I've been slightly surprised at the wide range of answers to some of the questions. Not many students identify similar perceptions to others. Also, although I won't be certain until the analysis is complete, the conceptions which students hold of 'learning' and 'understanding' do not seem to be as advanced as I had anticipated at the end of the programme.

I submitted an abstract for presentation at the ISL conference in September partly for the opportunity to disseminate some of my findings, but also, if accepted, to force me to start doing some substantial analysis. The abstract entitled 'The dynamics of motivation, life experience and conceptions of knowing of students from non-standard academic backgrounds' was accepted. As part of preparations for the paper I have been coding responses to questions on these topics from the stage 5 interview tapes as they won't be transcribed in time.

This has given me the opportunity to try out a different form of analysis ie directly from the tapes, without transcription. I have found it relatively

easy to code responses, but would find it very difficult to write direct quotations without transcriptions. Overall, I prefer coding from transcriptions. This approach also maintains a permanent record of codes along with the text from which they are derived, making later reference easier.

Appendix 6

Results tables – representative quotations and participant numbers

Table 5.1b Motivational factors – representative quotations

Categories of description	Representative quotations
Positive	
Intrinsic (deep approach)	
Subject interest	'…it's the subject….this is what I'm interested in.' (I1 S17) 'Because I'm interested in it and the sort of thinking and using your initiative involved.' (I1 S7)
Qualification aspiration	'I always wanted to be a physio.' (I5 S14) '…just working as an assistant and working with the physios and seeing how you can, what you can achieve as a physio and I thought 'Yes'.' (I1 S16) 'It's still what I want to do….' (I3 S12) 'I'm still motivated to finish the course…and get qualified.' (I4 S1)
Learning achieved	'…the more we've learned the more interesting I've found it.' (I2 S13) 'I feel a bit more confident (having passed earlier assessment.' (I3 S14)
Career / academic aspirations	'It's further learning that appeals really, to learn, to know a lot about something….' (I1 S5) 'I wanted to better myself really. I'd like to have a degree' (I1 S10) '..wanting to have a change of career…to progress and have something you can build on.' (I5 S17) '…the challenge of doing the coursework and trying to do it well….' (I5 S5)
Course experiences	''The practical, I like all the practical stuff really…all the practicals have really helped.' (S5 S11)
Placement experiences	'…the last placement I found very interesting and I thought, once again I realised that that is what I want to do…' (I3 S7)
Course familiarity	'…we've become a lot more familiar with the ways of studying and the ways you like us to work, so that really helped…' (I4 S14)

Extrinsic (surface approach)	
External support and expectations	'It's for my family as well.' (I1 S11) 'My Mum and Dad keep going 'Oh it's only two more years....'.' (I3 S15) '...the whole year group has been really motivational to each other...' (I5 S14) 'The staff here have been very positive towards my motivation...' (I5 S15)
Progress made	'You see that there is light at the end of the tunnel.' (I2 S10) '...you sort of count the years down...and that kind of keeps the motivation going...' (I4 S12)
Negative	
Workload	'The amount of work we've got to do I think has actually decreased my motivation.' (I2 S4) '...sometimes the volume of work.' (I5 S5)
Curriculum design	'...the practical things in college are gong to stop...the things that really motivate me for coming will start to stop...' (I3 S17) 'I've lost a lot of motivation....because we're doing less clinical stuff.' (I4 S5)
Self-directed study	'...we've been doing a lot of self-study....so you've really had to work on your own...so it's been quite hard to motivate yourself....' (I4 S1)
Placement experiences	'I think the de-motivation has a lot to do with my clinical placement.' (I3 S6)
Personal characteristics	'I think my motivation is affected by my lack of time planning.' (I5 S8)
Temporal factors	'Sometimes you think, Oh dear, it's such a long way off.' (I2 S6)
External pressures	'It (motivation) did take a bit of a nosedive.....but I think was mainly because of personal issues.' (I3 S9) '...other commitments that you have...pressures from outside...sort of everyday life really...' (I5 S3)
Employment issues	'...thinking about jobs and that there's not that many out there because there's so many of us going for them this year....' ((5 S14) '...you realise that your grades actually make no difference when you go for a job interview at all, they won't know what you're going to get.' (I5 S5)

Table 5.1c Motivational factors – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Positive					
Intrinsic (deep approach)					
Subject interest	15 – 1 4 5 6 7 8 9 10 11 12 13 14 15 16 17			1 - 16	3 – 1 5 8
Qualification aspiration	8 – 1 2 3 13 14 15 16 17	9 – 1 2 6 8 9 10 11 14 16	10 – 1 2 4 5 8 10 11 12 14 16	7 – 1 2 3 8 10 12 13	11 – 1 3 5 7 8 10 11 12 14 15 17
Learning achieved		5 – 4 5 11 16 17	5 – 3 8 13 14 16		6 – 1 3 5 8 12 16
Career / academic aspirations	9 - 1 3 5 6 7 8 10 11 12				2 – 5 17
Course experiences					1 - 11
Placement experiences			5 – 3 5 7 13 15		3 – 2 8 16
Course familiarity				1 - 14	
Extrinsic (surface approach)					
External support and expectations	7 – 3 9 10 11 12 13 14	3 – 4 6 8	1 - 15		7 – 1 10 11 12 14 15 17
Progress made		5 – 4 9 10 13 15	14 – 1 3 4 6 7 9 10 11 12 13 14 15 16 17	13 – 1 3 4 5 7 8 10 11 12 13 14 15 17	2 – 10 15

Negative					
Workload		5 – 4 7 8 12 14	2 – 1 5		4 – 1 5 10 14
Curriculum design			1 – 17	2 – 5 17	2 – 2 5
Self-directed study				1 -1	
Placement experiences			2 – 5 6		
Personal characteristics					1 - 8
Temporal factors		1 - 6			
External pressures			1 - 9		4 – 3 7 11 15
Employment issues					2 - 5 14

Table 5.2b Influence of prior learning experience – representative quotations

Categories of description	Representative quotations
Procedural	
Efficiency	'I have to be organised, I've learned that…' (S10) '…time management from when I was at college before.' (S13) 'I think I make more of an effort now to actually do things earlier.' (S6)
Understand learning	'..making sure a little bit more that I understand the topics and things…' (12)
Limited value	
Curriculum design	'…being made to stand on your own two feet..' (S14) 'The workload's getting a lot more than I expected …to happen on a degree.' (S11) 'The thing that surprises me is when we learn practical things in one session which I assumed physios spent weeks learning.' (S5) 'It's more supportive, the role of the teacher.' (S4)
Academic demands	I knew it was going to be a lot harder than the last one.' (S9) 'It's a lot harder than I was expecting…' (S13) '…references. I find that quite hard because I'd never had to do anything like that before.' (S10)
Prior experiences similar	
Experiences similar	'I have to say doing the degree before, at least I know what's expected. (S2) '…it was fine…just coming and getting on…' (S16)

Table 5.2c Influence of prior learning experience – participant numbers

Categories of description	Interview 1 (17)
Procedural	
Efficiency	6 – 1 6 10 11 13 15
Understand learning	1 – 12
Limited value	
Curriculum design	9 – 3 4 5 7 8 9 11 14 17
Academic demands	2 – 10 13
Prior experience similar	
Experiences similar	3 - 2 15 16

Table 5.3b Influence of assistant experience on clinical placement learning – representative quotations

Categories of description	Quotations
Positive	
Experience and skills	
Communication skills	'It…did make it a lot easier for me because having just the experience of being able to communicate with people….' (I2 S12) ….the way we spoke to patients, we already had that slight edge because we'd worked with patients for so long.' (I3 S13) '…you're quite willing to go and talk to anybody…' (I5 S2)
Environment familiarity	'You more or less know how things work, how things are run.' (I2 S6) '…you know almost where to find something, you have a clue of where they might be.' (I3 S17)
Professional behaviour	'…your professionalism is there….' (I4 S10)
Past experience	'… from working up and down the country…worked within different areas…' (I5 S3)
Influences on learning	
Confident	'They're (clinical educators) happy to let you go off on your own a lot earlier purely because you are obviously more confident.' (I2 S15) '… you can… almost relax into things a lot quickly than maybe if you don't have that other experience.' (I4 S12) '…you're just more used to using your initiative a bit more…' (I4 S1) '…like we got into a few debates with the physios on why we do this and why we do that.' (I2 S14)
Learning facilitated	'…I'd probably be more out of my depth if I hadn't had some experience.' (I2 S2) 'It made it a lot easier for….me to pick up things.' (I2 S12)
Faster progress	'…you quite often get the impression that the educators are happy to let you go off and see a patient on your own….' (I3 S5) '…once I got a caseload then I was really able to work….' (I4 S16) '…you're straight away sort of looking at clinical…' (I5 S5) '…the clinical educator can push us that bit more.' (I5 S14)

Others	
Treated as student	'I was treated like how a normal student would have been.' (I2 S1) 'I wasn't treated as an assistant at all.' (I2 S7) '...you do get treated differently as a student than as an assistant.' (I5 S12)
Ongoing employment	'...analysing your physios (at work), watching your physios, how they work is really, really helpful.' (I2 S11) '..the staff (at work) are very supportive... and I feel that that's helped me when I go on placements.' (I4 S2)
Maturity	'I don't know if being an assistant, you know, I think that being a more mature student helps.' (I2 S11)
Negative	
Assistant experience	'J - Do you feel that at any time you were being used as an assistant rather than treated like a student? S – To a certain extent I would say 'Yes....'.' (I2 S8) 'I tend to start off taking the role of the assistant still.' (I3 S5)
Educators' expectations	'Sometimes I think they expected too much.' (I2 S4) 'I think you are expected to be more familiar with certain things.' (I2 S6) 'I think they overestimate you. 'You're an assistant, you must know all of this'.' (I5 S8)
Delegation to assistants	'I find it really hard to ask someone who is at the same level as me to do something for me.' (I2 S4)

Table 5.3c Influence of assistant experience on clinical placement learning – participant numbers

Categories of description	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Positive				
Experience and skills				
Communication skills	13 – 2 4 6 7 8 9 10 11 12 13 14 15 17	6 – 1 2 5 13 14 17	9 – 1 3 8 10 1114 15 16 17	10 – 2 3 5 8 10 11 12 14 16 17
Environment familiarity	11 – 2 5 6 7 8 9 10 12 13 15 16	3 – 14 16 17	6 – 3 5 10 13 14 16	2 - 12 17
Professional behaviour			1 - 10	
Past experience				2 – 3 15
Influences on learning				
Confident	4 – 6 9 14 15		3 – 1 3 12	5 – 3 5 7 10 14
Learning facilitated	4 – 2 4 9 12			
Faster progress	10 – 1 2 5 6 7 8 11 13 15 16	1 – 5	2 – 7 16	6 - 3 5 8 11 12 14 15
Others				
Treated as student	7 – 1 6 7 8 9 10 16			10 – 1 3 5 7 8 10 11 12 14 16 17
Ongoing employment	1 – 11		1 - 2	
Maturity	1 – 11			
Negative				
Assistant experience	8 – 1 4 7 8 9 13 14 16	2 – 5 16		1 - 1
Educators' expectations	5 – 4 6 8 10 17			1 - 8
Delegation to assistants	3 – 4 9 16			

Table 5.4b Interactions between learning and employment – representative quotations

Categories of description	Representative quotations
Learning enhancement	
Treated as student	'…my boss…said 'I'm going to start treating you like a student now'…' (I1 S1) '…and she'll (the physiotherapist) will actually say 'What do you think?'…' (I1 S3) '…she will talk to me and try and help me…also explain more about why we're doing something.' (I3 S6) '…the Senior I work with…he's quite open to me giving suggestions about treatment ideas…' (I4 S10)
Learning opportunities	'…they (physiotherapy staff) are very helpful if you ask questions and things. They'll more than likely go through it with you.' (I1 S12) 'I'm thinking about more at work.' (I1 S13) '…with my colleagues we can sort of have discussions about what we're doing and why.' (I2 S14) '…instead of just having to think physio-wise when I'm on placement, I can also have a go in the clinical setting I am in.' (I3 S16)
Assistant role	
Value added	'I think it makes you a better assistant…' (I1 S9) '…some of the things I've learned I've taken back to my job..' (I2 S10) '…I take an interest in where I think the physio is going with the treatment…' (I2 S5) '…there's somebody there to discuss it with and see whether what you're thinking (about a patient) is right.' (I3 S8) '…what I'm learning here… and going back into my own work…I'm questioning more and more what I am doing as an assistant…there doesn't seem to be any evidence-based practice to what I'm doing…' (I3 S17) 'I'm probably more focussed on what I do as an assistant…' (I4 S10) '...you kind of think about things a lot more…clinical reasoning comes into it a lot more than before.' (I5 S8)

Greater responsibility	'Every time I go back and we start doing something…I talk to the Senior and he goes 'Yes, all right then give it a go…see what you think'.' (I1 S10) '…when they did ask me to work at a higher level I did get quite cross.' (I2 S5) '…sometimes they will expect more…and the leave the decision up to us, which is wonderful.' (I3 S7) 'generally they expect me to do more, I get to take on more responsibility, which sometimes can be a little bit daunting…' (I4 S8) '…I'm less frustrated than I was a couple of years back because I'm being give more, a bit more responsibility.' (I4 S11) '..I've developed my job at work…' (I5 S16)
Increased role consequences	'…there's a lot of to's and fro's whether I should be doing it (more).' (I3 S2) 'I'm still on the lowest assistant (grade) possible although I'm a third year student…seems a bit unfair because I'm doing a lot more than the other assistants.' (I4 S15) '…in my own job things have changed to the point where I'm getting put forward for technical instructor…' (I4 S17) '…the other assistant started looking at me to order them around and I backed off from that.' (I5 S17)
Limited role change	'I think among other assistants I'm looked on as different, which I don't like…I'm keen to try and keep it (being a student) as separate as possible.' (I2 S12) 'I find it hard to switch off sometimes from the student part. I want to go and do things, but I'm not allowed.' (I3 S10) '…I tend to skip back into the assistant role quite happily.' (I4 S5) '..sometimes you're allowed to do things because it actually suits them and other times you're not.' (I5 S8) '…our skills have been wasted…' (I5 S12)

Learning resource	'The other assistants are the worst ones…I think the pressure from them expecting me to teach them…that's the worst thing.' (I3 S10) 'I think I used my experience to help them (other assistants(out…and one of the technicians I work with as well…tends to come to me…' (I4 S10) '…a lot of physios came to me for evidence.' (I5 S7)
Absence felt	'…when I went on placement I heard from other people that I'd been missed quite a lot.' (I2 S2)
Qualification aspiration	'…probably made me a bit more determined to finish and get there…' (I2 S6)

Table 5.4c Interactions between learning and employment – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Learning enhancement					
Treated as student	2 – 1 3	5 – 1 6 9 12 16	5 – 1 3 6 10 16	2 – 10 16	
Learning opportunities	9 – 2 3 8 9 11 12 13 14 15 17	5 – 2 10 12 13 14	3 - 11 13 16		
Assistant role					
Value added	9 – 4 5 6 7 9 11 12 15 16	8 – 1 5 6 8 10 15 16 17	6 - 4 6 8 11 13 17	4 – 1 4 10 12	2 – 8 10
Greater responsibility	1 – 10	13 – 1 2 4 5 6 7 8 9 10 11 13 14 16	10 - 2 3 6 7 8 9 13 15 16 17	10 – 1 3 4 5 7 8 11 12 15 17	7 – 3 5 7 10 11 16 17
Increased role consequences		1 – 6	1 - 2	3 – 14 15 17	3 – 10 12 17
Limited role change		8 – 7 8 9 11 12 14 15 17	6 – 1 4 5 10 11 14	3 – 5 13 14	6 - 1 2 8 12 14 15
Learning resource		1 - 10	1 - 10	1 – 10	1 - 7
Absence felt		1 - 2			
Qualification aspiration		1 – 6			

Table 6.1b Conceptions of learning – representative quotations

Categories of description	Representative quotations
Recall (*memorising**)	'Because you don't have to think about it.' (I1 S1) '....when I recall things without any prompting.' (I1 S15) '... and I know what I've learned....' (I3 S15) '...if I can recall, particularly in a clinical setting.' (I5 S12)
Application (*applying**)	'...you're able to use the information you've got.' (I3 S16) '...if I know how to implement knowledge practically on a patient.' (I2 S4) '...when you're able to apply it and you're getting the results you expect.' (I4 S8)
Explanation	'....I can describe it to someone, explain it...' (I3 S16) 'When you can explain it to somebody else and they understand what you're saying.' (I1 S9) '....I should be able to teach someone else how to do it and they should be able to do that and get something out of it.' (I2 S17)
Comprehension (*understanding**)	'When I've understood it....' (I1 S7) '...everything then kind of fits into place.' (I2 S14) 'It just clicks all of a sudden....it's like the lights have been switched on.' (I4 S3
Conviction	'I know whether I know it or don't.' (I2 S7) '....knowing that you know it...' (I1 S16)
Discourse	'Because you are able to see where it links in....' (I2 S2) 'You know how to talk about it afterwards.' (I2 S10) '...having a debate and stuff and you know what you're actually talking about....' (I3 S14) '...when I can go away and think about it and sort of think about the implications of it....' (I4 S5) '...you can sort of have reasonable conversation with someone and argue your point...' (I5 S14)
Adaptation	'Because you know you can apply it and see your outcomes and adapt them if you know they're not right and know what to adapt them to.' (I3 S2) '....because when I'm at work I try to think about why people are treating patients like that, or why the patient is why they are and what's causing the problem, trying to apply that knowledge/' (I3 S5)

Transformation (*changing as a person**)	'…if you see something and you start, you sort of, the way you're thinking and looking at things is different.' (I2 S12)

* Saljo/Marton et al categories:
Memorising – 'learning as memorising' (2)
Applying – 'learning as the application of facts, procedures etc which can be retained and/or utilised in practice' (3)
Understanding – 'learning as the abstraction of meaning' (4)
Changing as a person – 'changing as a person' (6)

Table 6.1c Conceptions of learning – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Recall (*memorising**)	12 - 1 2 3 4 5 6 10 11 12 13 15 16	6 – 5 7 8 12 15 17	10 - 3 4 6 7 10 12 13 14 15 16	7 - 2 3 10 11 13 15 16	4 – 3 12 15 16
Application (*applying^*)	5 – 3 4 5 10 14	5 – 2 4 5 11 16	6 – 2 4 9 10 12 16	7 – 5 8 10 13 14 15 17	5 – 1 2 5 8 11
Explanation	6 – 5 8 9 10 11 17	5 – 1 5 8 9 17	8 – 1 4 7 8 9 13 16 17	6 – 1 5 7 15 16 17	8 - 1 2 7 8 10 11 14 17
Comprehension (*understanding^*)	2 – 7 13	4 – 1 2 14 17	4 – 4 8 11 15	2 - 4 7	1 - 12
Conviction	1 – 16	2 – 7 15		1 - 12	
Discourse		8- 2 4 5 6 10 15 16 17	4 – 6 7 14 15	2 – 5 14	1 - 14
Adaptation			3 – 2 5 12		
Transformation (*changing as a person**)		1 - 12			

* Saljo/Marton et al categories:
Memorising – 'learning as memorising' (2)
Applying – 'learning as the application of facts, procedures etc which can be retained and/or utilised in practice' (3)
Understanding – 'learning as the abstraction of meaning' (4)
Changing as a person – 'changing as a person' (6)

Table 6.2b Conceptions of understanding – representative quotations

Categories of description	Representative quotations
Recall	'Once I can come up with an answer almost before someone else.' (I1 S13) '….if I have it in my head after you've learned something …you can see it in front of you, then you know you understand it.' (I3 S7) 'If I don't understand I won't be able to remember it.' (I4 S17) 'I've got to understand something before I can learn it, so probably when I can recall it…' (I5 S15)
Retention	'…if I learn something and I remember that next year.' (I2 S4) 'If you understand something that knowledge is always going to be there.' (I1 S16)
Application	'…I know how to use my knowledge and put that into practice.' (I4 S4) 'I think if you can apply it to something….then you know you've understood it.' (I3 S8) 'Because I know what I'm doing.' (I2 S14)
Outcomes	'If they've (patient) actually performed what you've asked them to do and you've seen an improvement then obviously you're on the right track…you've understood.' (I3 S9) 'If you're applying something you should see results. And it you're not seeing results then you know your rationale is not quite right.' (I3 S8)
Explanation (*explaining**)	'…when I'm able to tell someone else about it…' (I1 S7) 'You can explain it to other people.' (I3 S15) '…if I can put across what I perceive it to be… and they say 'Yes that's right'.' (I2 S12)
Comprehension	'I just know when I've understood it.' (I3 S6) '…you know in your own mind and can link it to other things…' (I3 S15) '…by understanding it you know you've done the right measurement.' (I5 S2)
Conviction (*provisional wholeness**)	'..all the pieces of the jigsaw fit together really….' (I1 S10) 'You always know if you haven't understood something.' (I1 S5) 'When I make sense out of it.' (I2 S7)

Understand others	'…if somebody else will say something and I think 'Oh yes, I knew that' then I think 'Yes, maybe I have understood it' (I2 S12) '… I go away and start reading it then I think 'Oh yes' and it kind of triggers it to come back and then I know that I have actually understood it.' (I2 S13)
Discourse	'It's being able to sort of reason round it and sort of justify your choices…' (I3 S2) 'When I can have a conversation with people and talk about it and think 'Well that's not right…' (I1 S14) '…you can sort of…argue your point or have different perspectives on something.' (I5 S14)
Transfer (*flexibility**)	'Understanding is when you can take it across.' (I2 S8) '… I can apply it to something else, not just to the one thing….' (I3 S12)
Contextualisation	'When you can fit it into a bigger picture.' (I1 S17) '….able to relate it to something else in life/' (I1 S6)

* Entwistle and Entwistle categories:
Explaining – 'confidence about explaining'
Provisional wholeness – 'coherence, connectedness and 'provisional wholeness' (things clicking into place)
Flexibility – 'flexibility in adapting and applying'

Table 6.2c Conceptions of understanding – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Recall	2 – 2 13	1 – 10	3 – 1 4 7	1 - 17	1 - 15
Retention	1 – 16	1 – 4			
Application	4 – 5 8 13 15	3 – 5 8 14	3 – 5 8 16	4 – 4 5 12 15	5 – 2 3 5 8 16
Outcomes			4 – 3 8 9 13		
Explanation (*explaining*^)	7 – 1 4 5 7 9 12 15	8 – 1 4 7 8 10 11 12 16	11 – 1 2 4 6 7 10 11 13 14 15 16	8 – 1 5 7 10 11 12 13 16	8 – 1 8 10 11 12 14 15 17
Comprehension	10 – 1 3 5 6 8 10 12 13 14 16	4 – 6 7 14 17		2 – 3 8	
Conviction (*provisional wholeness*^)			4 – 1 6 14 15		2 – 2 7
Understand others		2 – 12 13			
Discourse	1 – 14	3 – 2 16 17	1 - 2	3 – 2 14 15	2 – 14 16
Transfer (*flexibility*^)		3 – 8 15 16	4 – 11 12 15 17		
Contextualisation	2 – 6 17				

* Entwistle and Entwistle categories:
Explaining – 'confidence about explaining'
Provisional wholeness – 'coherence, connectedness and 'provisional wholeness' (things clicking into place)
Flexibility – 'flexibility in adapting and applying'

Table 6.3b Memorisation / understanding relationship – representative quotations

Categories of description	Representative quotations
Understanding before memorisation	'I think understanding comes first....' (I4 S2) 'I personally would try to always understand things before memorising it.' (I3 S7) '...you have to understand something to put it into memory...' (I5 S16)
Understanding facilitates memorisation	'I don't really think you can remember something that well before you understand it.' (I2 S1) 'I think the only way that you can memorise things is... to understand them.' (I3 S10) '...I have to understand it in order to memorise it.' (I4 S12)
Understanding and memorisation concurrent	'...stuff that I understand I actually remember anyway.' (I3 S15) 'They happen at the same time....by understanding it you just automatically remember it.' (I4 S1) '...I don't need to memorise that because I understand the way it works...' (I5 S2)
Memorisation before understanding	"I suppose memory comes first because you can remember something and then give it a lot of thought and understand it.' (I1 S6) 'J – Can you remember something if you have not understood it? S – Yes, I think so.' (I5 S14)
Repetition after memorisation facilitates understanding	"If it's difficult, I will memorise it first and the more I say it over and over again and think about it, the picture becomes clearer.' (I1 S7) '...sometimes by going over something over and over and over again, trying to memorise that particular thing, suddenly it sill just, I'll understand it.' (I1 S12)
Memorisation aids understanding	'...sometimes I have tried to do a memorising thing....and the suddenly I've understood it because I've memorised it and ...repeatedly done it... and suddenly I'll understand it.' (I5 S12)

Table 6.3c Memorisation / understanding relationship – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Understanding before memorisation	11 – 2 6 7 8 9 11 13 14 15 16 17	10 – 1 6 7 8 9 10 12 13 15 16	7 – 3 4 6 7 10 12 13	8 – 2 3 4 5 7 13 15 17	10 – 3 7 8 10 11 12 14 15 16 17
Understanding facilitates memorisation	10 – 1 3 4 5 9 10 11 12 14 16	11 – 1 2 4 5 6 10 11 12 13 14 17	10 – 1 5 6 8 9 10 11 14 15 17	6 – 5 10 12 14 15 17	4 – 1 5 8 17
Understanding and memorisation concurrent			8 – 1 2 3 4 5 15 16	6 – 1 8 10 12 14 16	2 – 2 11
Memorisation before understanding	1 – 6				2 – 3 14
Repetition after memorisation facilitates understanding	2 – 7 12				
Memorisation aids understanding					1 - 12

Table 7.1b Desired roles of programme tutors – representative quotations

Categories of description	Representative quotations
Provider of information	'…coming out and teaching us…their experience of being the physio. They're all real, it's not just out of the book…' (S3) '…provides relevant information…' (S7) '…the knowledge that the teacher has…they must be able to actually put it over to the students.' (SI7)
Facilitator and guide	'…to guide us…in what information is relevant to us…' (S1) '…sets you off to go and do the work yourself…' (SI4) '…more to just facilitate the learning and kind of be there, bounce ideas off and advise.' (S14)
A resource	'…helping us with our assignments and stuff.' (S1) '…you can come back to them when you've got questions.' (SI4) 'Friendly, there if you need them…..supportive.' (S2)

Table 7.1c Desired roles of programme tutors – participant numbers

Categories of description	Interview 1 (17)
Provider of information	12 – 3 6 7 8 9 10 11 12 13 15 16 17
Facilitator and guide	12 – 1 4 5 6 8 10 12 13 14 15 16 17
A resource	10 – 1 2 3 4 8 9 10 12 13 14

Table 7.2b Overall influences on learning on clinical placement – representative quotations

Categories of description	Representative quotations
Positive	
Direct involvement with patients	'The hands-on, definitely the hands-on…' (S3) '…developing clinical reasoning…' (S14) 'They know that you can go and do that....they're confident that you can do that…' (S12) '…being given responsibility and a caseload.' (S16)
Educator-student interaction	'I need to watch first and take it in and then do it myself/' (S7) '…I think it's important, you need that feedback from your clinical educator.' (S11) '…if you get the right clinical educator…..I just think you can learn so much from a good clinical educator….' (S17)
Interaction with junior clinicians	'Working with other juniors….because they're closer to your level so you just feel like you can ask them and you know they're not marking you as well so it probably makes things a bit easier.' (S15)
Employment experience	'…the communication skills allow you to be learning…just ask that question…' (S2)
Placement variety	'…the variety of placements…working with the different clinical educators' (S12) '…I work in continuing care, so going into general hospitals has been great for me. I loved the ward work and getting that whole experience.' (S17)
Negative	
Expectations and responsibility	'…some of them do, because of the job you do, just expect you to know certain things.' (S10) '…instead of being an educational placement….it was like 'You're nearly qualified, this is what you need to be doing, if you can't then you shouldn't be doing this'.' (S8)
Educator-student interaction	'… if they weren't so short staffed I could have learned so much more.' (S2) '…they tend to leave you a lot more, you do get less supervision.' (S12) '…I'm terrible if someone's stood over me, watching me.' (S16) '…when you don't get feedback really.' (S11)
Direct involvement with patients	'You can't really learn much through in-service training….I think I would have benefited from having more patients….' (S5)

Employment experience	'…you've done something in your job and you think it works and then you go to another place and you think 'Well, actually, my way's better', but you don't want to start treading on their toes or anything like that….that can be quite negative.' (S10)
External pressures	'…the travelling was absolutely killing.' (S7) 'The dissertation and the last placement….instead of going home and thinking 'In need to be reading round this subject'… I was thinking 'I need to be writing'.' (S16)
Placement organisation	'J – So the time gap between your learning and the time you had the relevant placement? S – Yes.' (S14)

Table 7.2c Overall influences on learning on clinical placement – participant numbers

Categories of description	Interview 5 (13)
Positive	
Direct involvement with patients	9 – 1 3 5 8 10 11 12 14 16
Educator-student interaction	4 – 7 11 15 17
Interaction with junior clinicians	1 - 15
Employment experience	1 – 2
Placement variety	2 – 12 17
Negative	
Expectations and responsibility	4 – 3 8 10 15
Educator-student interaction	4 – 2 11 12 17
Direct involvement with patients	1 – 5
Employment experience	1 – 10
External pressures	2 – 7 16
Placement organisation	1 - 14

Table 7.3b Programme influences on learning – representative quotations

Categories of description	Representative quotations
Self-directed study	'..there's a lot more doing things for yourself.' (I4 S5) '...I wouldn't expect just to be told some of the stuff, I'd go and find out a bit more...' (I4 S1) '...you're encouraged to go out and do your own work...' (I4 S5)
Essay requirements	'I think it's the essays you write, in the beginning they start basically....then you have to be more critical and analytical...'(I5 S17)
Literature evaluation	'...critiquing articles an evaluating and analysing articles, I think I've really improved on that...' (I4 S11) 'I do think more about the implications...you don't take things at face value...' (I5 S5) 'I'm more analytical...' (I5 S10)
Broad resource base	'...clinical guidelines and looking at things like that a lot more...' (I4 S15) '...to read different areas rather than just going straight to a book or straight to an article.' (I4 S10) 'I'm using more journal articles and looking for research and perhaps wider sources.' (I5 S14)
Sharing ideas	'...bumping other ideas off other students...talking to other people (at work).' (I4 S11)
Questioning	'I've become more confident to ask questions.' (I5 S2)
Familiarity with learning activities	'I'm a little more laid back...because I'm more used to doing assignments...' (I5 S1)
Planning and writing skills	'...I can write notes a bit better...if I'm having to plan something out...' (I4 S3)
Time management	'...organising as well, you have to organise your time a lot.' (I4 S1) '...time management...' (I4 S3)
Interest in learning	'I've just got more interest and my learning is out of interest rather than necessity now.' (I4 S13) 'I find I do get carried away with things...keenness of learning, learning more and still trying to...' (I5 S12)

Table 7.3c Programme influences on learning – participant numbers

Categories of description	Interview 4 (15)	Interview 5 (13)
Self-directed study	4 – 1 5 10 13	
Essay requirements		1 – 17
Literature evaluation	1 – 11	7 – 1 5 10 12 14 15 16
Broad resource base	2 – 10 15	2 – 5 14
Sharing ideas	1 – 11	
Questioning		1 – 2
Familiarity with learning activities		1 – 1
Planning and writing skills	1 - 3	
Time management	2 – 1 3	
Interest in learning	1 - 13	1 – 12

Table 7.4b Measures to improve programme – representative quotations

Categories of description	Representative quotations
Design	
Clinical placement timing	'…move one of the placements into the third year…' (I4 S17) 'I really remember the third year going quite slowly….because we only had one placement on that.' (I5 S1) 'There's something that would definitely suit me…placements after you learn the theme, which is just impossible because there's just not enough…' (I5 S11)
Practical learning timing	'…put a bit more practical in again…we never actually get to practise things again.' (I4 S2) '…it's a shame that we lose the clinical side quite so early in the course.' (I5 S5) '…I just feel there's a big gap between doing practical stuff in first and second year and then to get into the fourth year…' (I5 S17)
Assessment timing	'…sometimes the assignments…could be a bit spread out more over the year.' (I4 11) '…there's a lot of assessment due in together.' (I4 S15)
Assessment formats	'I'd get rid of theory exams and make them all practical.' (I4 S13)
Workload	'I think some of the run-ups just before Christmas were crammed with work.' (I5 S3) '…there's time when it felt like we had loads of work on…' (I5 S5)
Attendance/study time	'…coming in three times a week instead of two.' (I4 S7) '…it would have been nice to have an extra half day of study…' (I5 S8)
Operation	
Content coverage	'…I would have liked to have some more input on clinical reasoning prior to getting that assignment…' (I4 S8)
Content relevance	'…sometimes it's not clear what were working towards…' (I4 S14)

Directed tutorials	'…I never seemed to get my head round it…I don't really know why, whether it was just because a lot of it was tutorials…' (I4 S10) '…going back to NS1, I think some more classroom based stuff for that would be useful just to stop the confusion because it's a tricky topic.' (I4 S16)
E-mail system	'…if the administration…had our own personal e-mail because I just find the college one irrelevant to my life really…' (I4 S17)

Table 7.4c Measures to improve programme – participant numbers

Categories of description	Interview 4 (15)	Interview 5 (13)
Design		
Clinical placement timing	6 – 1 4 5 13 15 17	4 – 1 11 15 17
Practical learning timing	4 – 2 5 15 16	5 – 2 5 10 14 17
Assessment timing	4 – 3 11 13 15	
Assessment formats	1 – 13	
Workload		2 – 3 5
Attendance/study time	1 – 7	1 - 8
Operation		
Content coverage	1 - 8	
Content relevance	1 -14	
Directed tutorials	2 – 10 16	
E-mail system	1 - 17	

Table 7.5b Research activity – intentions – representative quotations

Categories of description	Representative quotations
Complete the task	'…to actually finish 10,000 words, which I'd never done in my entire life.' (S7)
Pass	'…I wanted to pass…' (S16)
Produce good work	'I set out to do something that was good…' (S16)
Learn about process	'…wanted to get to grips with the research and the process.' (S8) 'I wanted to increase my knowledge of the research process.' (S16)
Produce useful results	'…actually produce a piece of work that would actually be useful to people in my profession.' (S16) 'I chose a topic that is something I'm currently involved in…so that I can implement what I've looked at.' (S12) '…more interesting because I could get something out of it.' (S15)
Learn about topic	'…I wanted to find out about it …there was a bit of debate on it where I work…' (S7)` '…trying to learn about the topic I was writing about…' (S1) '..trying to come away with a really good understanding, a really good knowledge of the specific topic area.' (S5)

Table 7.5c Research activity – intentions – participant numbers

Categories of description	Interview 5 (13)
Complete the task	1 - 7
Pass	1 - 16
Produce good work	1 – 16
Learn about process	4 – 1 8 11 16
Produce useful results	4 – 12 15 16 17
Learn about topic	9 – 1 2 3 5 7 8 10 14 15

Table 7.6b Research activity – influences on learning – representative quotations

Categories of description	Representative quotations
Positive	
Resources	'…access for resources was very good…' (S2) 'Getting hold of the articles was fine because I've got a good hospital library…' (S1)
Support	'..support, tutor support…home support…colleagues at work.' (S17)
Supervision	'…support from the supervisor.' (S3) '..knowing that we'd always got, you know, our supervisors to come back to…' (S8) 'I'd have struggled very much if I hadn't had...somebody there…' (S12)
Learning opportunity	'..the idea of looking at all the research on something.' (S5)
Procedural factors	'…collecting the data, collecting the articles, doing the searches...' (S11) 'I have learned from it because I have had to work so hard at it.' (S12) 'I enjoyed writing the questionnaire…collating the data.' (S15)
Evaluation skills	'..evaluating the articles.' (S11) '…reading articles…analysing them…enhancing that ability to synthesise information, I just found the whole thing quite positive.' (S16)
Efficiency	'I think you need time and that's where you need like a timetable…I think I got a lot out of organising and structuring things.' (S17) '…my organisational skills, I've possibly got a little bit better and I suppose time management as well is another' (S10)
Negative	
Research novice	'I would have liked a far better understanding of research in my head, rather than having to look through books.' (S5) '..it would have been useful if I'd known a little bit more about the process before I actually got into starting to get on with it…' (S12)

Procedural factors	'I'd underestimated how difficult doing a literature review would be…' (S5) '…finding the data and things…' (S7) 'The ethics took so long…it was quite frustrating.' (S8) 'Getting the participants to agree to take part and return the questionnaire.' (S14)
Supervision	'…maybe a bit more specific feedback.' (S1)
Temporal factors	'…it is the time factor, that was the big issue really.' (S8) '…my time management, trying to fit things in.' (S3)

Table 7.6c Research activity – influences on learning – participant numbers

Categories of description	Interview 5 (13)
Positive	
Resources	2 – 1 2
Support	1 - 17
Supervision	7 – 1 3 7 8 11 12 14
Learning opportunity	1 – 5
Procedural factors	3 – 11 12 15
Evaluation skills	2 – 11 16
Efficiency	3 – 10 16 17
Negative	
Research novice	2 – 5 12
Procedural factors	9 – 3 5 7 8 10 11 14 15 16
Supervision	1 - 1
Temporal factors	2 – 3 8

Table 7.7b Research activity – learning from the experience – representative quotations

Categories of description	Representative quotations
Positive	
Research process	
Topic specificity	'You've got to have quite a specific topic...' (S1)
Literature evaluation	'...more comfortable with the process of reviewing literature.' (S7)
Practical aspects	'I didn't mind data collection.' (S16)
Research knowledge	'...go through and make my own notes on the research process...it really needed to be in your head.' (S5)
Research process	'I learned about the components of the research process...' (S16)
Organisation and time management	'Need to be organised with your method...' (S1) 'Get your research early, focus on what you're doing really early on so then you give yourself time later on...' (S11) '...you've got to be so organised...' (S16)
Writing skills	'I think my English actually must have improved somewhere along the line.' (S3)
Outcomes	
Achievement	'...I actually can do it.' (S7)
Learning	'..it was interesting...discussing things that I'd been reading up on...' (S3) 'I've learned a lot about the subject area, which was positive.' (S16)
Positive results	'...just getting the results and just like 'Wow!'.' (S8) '...I think it's been good because of the results. ...there were some positive things come out of the results... It does give you that 'Yes, it's not that bad after all' sort of thing.' (S12)
Clinical releance	'I was taking it back to work...' (S3) '...what I did learn is what I did end up producing means change is needed...' (S17)

Enjoy research	'I did enjoy a lot if it.' (S8) 'J – Would you like to do more research? S – Maybe when I'm a Senior…' (S11) 'I'd do it again, I'd definitely do it again.' (S17)
Respect researchers	'J –.Do you feel more sympathetic about research when you read it? S – Yes…the difficulties of getting the data…' (S14)
Negative	
Research process	
Statistics	'I don't think I've learned anything out of statistics because I don't understand it and I don't want to get into it…' (S2) '...the stats, I still keep that problem.' (S7)
Writing report	'I'd help other people take part in it, I just never want to write it.' (S10) 'I wouldn't be the one writing it up…' (S15)
Outcomes	
Future research involvement	'I'm not gong to be a research physio, I can tell you that now.' (S12) 'It's not something I'd like to go into.' (S14)

Table 7.7c Research activity – learning from the experience – participant numbers

Categories of description	Interview 5 (13)
Positive	
Research process	
Topic specificity	1 – 1
Literature evaluation	1 - 7
Practical aspects	1 - 15
Research knowledge	1 – 5
Research process	1 – 16
Organisation and time management	4 – 1 10 11 16
Writing skills	1 – 3
Outcomes	
Achievement	1 - 7
Learning	3 – 2 3 16
Positive results	2 – 8 12
Clinical relevance	2 – 3 17
Enjoy research	5 – 8 10 11 16 17
Respect researchers	1 - 14
Negative	
Research process	
Statistics	2 – 2 7
Writing report	2 – 10 15
Outcomes	
Future research involvement	3 – 12 14 15

Table 8.1b Assessment – intentions – representative quotations

Categories of description	Representative quotations
Pass	'Passing it.' (I1 S2) 'Getting through it was the major factor…' (I1 S6) '…know enough to pass the exam.' (I2 S9)
Perform well	'I wanted to do as best as I could.' (I1 S4) 'I wanted to do well.' (I1 S6) 'I wanted to get a good grade because ….it meant I'd grasped the concept.' (I1 S8) 'A good grade.' (I2 S17)
Practical skills	'..getting good practical skills.' (I2 S17) I was trying to work on that, make sure my skills…were good.' (I2 S12) '…getting the techniques right.' (I2 S9) '…to be able to perform techniques correctly…be confident what I'm doing.' (I2 S4)
Learn everything	'I wanted to actually know everything we'd been taught…' (I1 S16) 'I was wanting to know the whole topic…' (I2 S14) 'I didn't have the faintest idea what sort of questions, so I thought I'd try to do everything.' (I2 S4)
Consolidate knowledge	'…trying to reinforce my knowledge…' (I2 S16) '…tried to think a bit behind it…' (I2 S15) '…to try and make my knowledge a bit more solid.')I2 S1)
New learning	'I wanted to do something that I didn't really know a lot about….' (I1 S9) 'Learning the topics…I'm quite interested in movement analysis.' (I1 S12) '…to learn…to still have the knowledge afterwards…' (I1 S16)
Clinical use	'…I'm taking it forward now if I go and see somebody…' (I1 S2) '…you want to be able to apply it. You can't just use it for the exam purpose and then forget about it.' (I1 S9) '…to be able to use the skills later on…' (I1 S14) '…I wanted to be able to actually understand why you do certain techniques…for when you go out into clinical education…' (I2 S13)

Understanding	'Just to understand the whole thing at the end.' (I1 S7) '…you just want a better understanding…' (I1 S10) '…trying to actually understand…not just learning all the long words…' (2 S13) '…an understanding of what we were doing…so that I was confident..' (I2 S11) '…to learn the subject enough to be able to talk round it…' (I2 S6)

Table 8.1c Assessment – intentions – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)
Pass	12 – 1 2 4 5 6 7 8 9 10 12 14 16	9 – 1 2 4 5 6 9 10 11 16
Perform well	6 – 4 6 8 9 11 15	1 – 17
Practical skills		10 – 1 4 8 9 10 11 12 15 16 17
Learn everything	2 – 8 16	3 – 4 14 16
Consolidate knowledge		6 – 1 5 12 15 16 17
New learning	3 – 9 12 16	
Clinical use	12 – 1 2 4 6 8 9 10 11 12 13 14 16	8 – 4 7 8 11 12 13 14 16
Understanding	12 – 1 2 3 4 7 8 9 10 11 12 13 14 15 16 17	11 – 1 6 8 9 10 11 12 13 14 15 16

Table 8.2b Assessment – processes – representative quotations

Categories of description	Representative quotations
Theory – essays	
Information sources	
Libraries	'..the library here is really good and they've got a quite a lot of selection.' (I1 S13) '…it's basically books in the library.' (I1 S5)
Internet	'I went on the Internet…' (I1 S2) '…I'm happy to use the Internet.' (I1 S7)
Work	'I used a lot of work's resources…' (I1 S2) '…I went to a cardiology department and I spoke to them for a long time…' (I1 S17) 'I did ask my colleagues for a bit of advice…' (I1 S14) '…there's a programme running already at my work so I was able to go and watch that.' (I1 S10)
Other organisations	'I wrote to a few organisations…' (I1 S11) 'I phoned up people like the British Heart Foundation…' (I1 S13)
Books	'I just read through (books(.' (I1 S1) 'I used tons and tons of books, a big pile of them…' (I1 S17) '…reading through…taking out relevant bits, trying to get a picture.' (I1 S12)
Other students	'…the second years are quite good…they sort of give you a direction.' (I` S`7)
Topic understanding	
Understand topic	'…I didn't understand the question…it took maybe a week or two to even understand the question, but I wanted to try and work it out for myself.' (I1 S17) '…I look at the question and try and interpret the question correctly.' (I1 S11)
Writing processes	
Content selection	'…read through…write down things I want to include in the assignment…' (I1 S1) '…I just sort of put in key points that I want to put in…' (I1 S13) '…I shorten my notes from what I've got, relating to the question and bringing if all together…' (I1 S11)

Draft review	'…put it together….then just leave it mulling over in my mind for a little while…' (I1 S1) 'I do the whole assignment and I will read it 2 or 3 days later and make sure that it makes sense…' (I1 S13)
Essay plan	'I tend to do it straight onto the computer. I don't do a written plan.' (I1 S6) 'I just do it straight onto the computer, first time out.' (I1 S15)
Writing procedure	'…usually I tend to start gong through it (information) and start writing stuff…' (I1 S16)

Theory- unseen exams	
Reading	
Books and notes	'…spending some time just reading my notes…' (I2 S16) 'I went through the books and my notes…' (I2 S15)
Revision notes	'…went over it and wrote cue cards…' (I2 S17) 'Initially I sat down and wrote my revision notes up…' (I2 S16) '…I wrote bits and pieces down.' (I2 S9)
Cover everything	'I tried to go through everything.' (I2 S4)
Existing questions	
Review tutorial questions	'I did go through all the tutorial questions.' (I2 S16) 'I tend to go over the tutorials we have done and see may answers…' (I2 S15)
Read past papers	'I do look at them and find them useful…' (I2 S14) 'I didn't actually sit down and try. I just looked at them to have just an idea of the type of questions it could be.' (I2 S4)
Practise past papers	'…past exam papers…to get used to doing the actual exam papers.' (I2 S7) '…get the question…and try to structure my answers…under time constraints.' (I2 S11)
Utilised others	
Talked to others	'…talked to people about it information learned), peers, and just sitting with friends and family…' (I2 S16)

Practical exams	
Theory element	
Reading	
Read	'…did the reading theory at home, reading up on it.' (I2 S1) 'I read a lot.' (I2 S16)
Revision aids	
Diagrams	'Muscles on my walls. It was like visual all the time, lots of visual stuff.' (I1 S8) '…one of the books was really good…you had things there…pictures.' (I1 S2)
Revised notes	'I read through the notes and books…' (I1 S16) '…mostly it was just going back on the notes I already have.' (I2 S1) 'I used the notes I already had, I didn't want to waste time on doing new ones…' (I2 S4)
Made notes	'…took separate paper and did bullet points…' (I1 S12) '…actually writing the notes helps you to learn the material…' (I1 S5) 'I wrote out revision cards, index cards…and I just carried those around.' (I2 S5) '…made notes on what the techniques involved, the principles of why you're doing it…' (I2 S16)
Revision timetable	'Each week…I write a list of what I've got to try and learn for the following week.' (I1 S3)
Utilised others	
Work colleagues	'…also just spoke to some people at work.' (I1 S16) 'I always question people at work…' (I2 S9)
Collaborative learning	'…we practised the movements…bounced ideas off each other. (I1 S14) 'sometimes over the weekend we meet up and we did mock exams on each other.' (I1 S13) '…we did use each other…that helps as well because what one person remembers somebody else might not, so you're pooling your knowledge.' (I2 S8) '…we'd look at it theoretically…. and then we'd go away to practise it practically in the Tuesday sessions.' (I2 S11)
Knowledge tested	'…got other people to test me…' (I1 S9) '…when I was around people I got my girlfriend and my family to test me.' (I1 S16) 'Some of my friends from my workplace actually helped me, tested me…' (I1 S14)

Practical element	
Practise	
On others	'..practising all the time...going over things with other people.' (I1 S12) 'I practise with my family sometimes...' (I1 S8) 'I just practised on students here.' (I2 S1) '...physios at work were really good as well, they booked out time for me to practise on them.' (I2 S13)
On equipment	'I used some of the models here...' (I1 S17) 'I started with the bones...I had the whole model out with the ligaments...' (I1 S7) 'Getting to know the machines...' (I2 S8) 'J – Were you able to look at the equipment at work or was that confined to here? S – I was confined to here, but I could obviously look at the equipment....and become more familiar with the different dials...' (i2 S14)
Presenting verbally	'...I was just talking and talking and getting used to talking to someone...' (I1 S17) '...just went off and talked to myself...' (I1 S16)
Visualisation	
Process visualisation	'Pretending there is someone, and the practical, ...you imagine you're doing this and doing that..' (I2 S7)

Table 8.2c Assessment – processes – participant numbers

Categories of description	Interview 1 (17)	Interview 2 (16)
Theory - essays		
Information sources		
Libraries	9 – 2 3 4 5 9 10 11 13 15	
Internet	1 – 2	
Work	10 – 2 4 8 9 10 11 13 14 16 17	
Other organisations	5 – 8 9 10 11 13	
Books	12 – 1 4 5 6 9 10 12 13 14 15 16 17	
Other students	1 – 17	
Topic understanding		
Understand topic	2 – 11 17	
Writing processes		
Content selection	4 – 1 10 11 13	
Draft review	2 – 1 13	
Essay plan	4 – 1 6 13 15	
Writing procedure	1 – 16	
Theory- unseen exams		
Reading		
Books and notes		9 – 1 2 6 10 13 14 15 16 17
Revision notes		10 – 1 5 6 7 8 9 10 13 16 17
Cover everything		1 – 4
Existing questions		
Review tutorial questions		3 – 7 15 16
Read past papers		2 – 4 14
Practise past papers		8 – 2 7 8 10 11 13 15 17
Utilised others		
Talked to others		1 – 16
Practical exams		
Theory element		
Reading		
Read		8 – 1 4 6 9 11 14 15 16
Revision aids		
Diagrams	4 – 2 8 9 17	
Revised notes	4 – 4 9 14 16	4 – 1 4 12 15
Made notes	5 – 1 5 9 12 16	10 – 1 5 6 8 9 10 11 13 15 16
Revision timetable	1 – 3	

Utilised others		
Work colleagues	1 – 16	2 – 9 14
Collaborative learning	2 – 13 14	5 – 8 9 11 16 17
Knowledge tested	4 – 9 13 14 16	
Practical element		
Practise		
On others	11 – 1 2 4 5 7 8 9 10 12 13 14	14 – 1 2 4 7 8 9 10 11 12 13 14 15 16 17
On equipment	10 – 1 2 4 5 7 8 9 15 16 17	8 – 5 6 8 10 11 12 14 15
Visualisation		
Process visualisation		1 – 7

Table 8.3b Learning from assessment experiences – representative quotations

Categories of description	Representative quotations
Verbal presentations	
Preparation	
Content	
Topic selection	'I got bored with the topic that I was researching.' (I3 S14) 'I wasn't very interested in the first subject I talked about, but this one I was…and I was very confident in the subject and enjoyed giving the seminar.' (I4 S16)
Topic knowledge	'…because people were gong to ask questions I knew I had to look in obviously a bit deeper into what I was doing…' (I3 S3) '…make sure that you're well prepared and you have really read up, that you're got a good knowledge base of the subject…' (I3 S11) 'I don't think I knew the subject well enough…' (I3 S12)
Focussed information	'…you had to compact it so much more and you couldn't say hardly anything that you wanted to say…' (I3 S2) '…you sort of get loads of material….you don't use a lot of it…' (I3 S6) '…being more precise in my content really…' (I4 S12) '…you had to be limited in what information you give because you only had about five or seven minutes…' (I4 S10)
Interesting information	'…make things as interesting as possible to your audience…what you're saying must mean something to them.' (I3 S7) '…I had little props and things and tried to get people to think a bit more.' (I3 S9)
Visual aids	
Volume	'…try not to use too many overheads…' (I3 S10) '…try not to have too many slides…if you have too many slides people don't listen to you.' (I5 S1)

Format	'…perhaps in the future I could do something with PowerPoint.' (I3 S1) '…I was determined to use PowerPoint to make sure that I could actually do it.' (I4 S8) '…we decided PowerPoint was much nicer…it looks more professional…' (I4 S13) 'I find PowerPoint easier to present with than OHP.' (I5 S11)
Design	'I've become more aware of the importance of trying to make your visual aids a bit more exciting.' (I5 S5)
Preparation	
Oganisation	'…I didn't have time…it was all a bit of a rush at the end.' (I3 S12) '…be much more organised…' (I3 S13)
Practice	'I did… talk it through a couple of times, just to see the length of time really.' (I3 S1) 'I think I'd run through it a few more times…' (I3 S15) '…made sure I'd practised it through and I didn't just write it once and say that will do.' (I4 S16)
Tutor feedback	'I make use of them (tutors) quite a lot, even if it's just the day before just to see and confirm that I am on the right track.' (I5 S7)
Time management	'Time management is always hard….not to run under time, not to run over time…' (I5 S3) '…you know how to time things better…' (I5 S16)
Time consuming	'It took a lot of preparation, the amount of time I put into it was so much considering it was like a half hour talk…' (I3 S15)
Prior experience	
Useful	'…because of the first experience I was a little bit more confident.' (I4 S11) '…the preparation time for the two that I've done this year was easier…' (I5 S17) 'The more you do the more comfortable you become with actually standing up…' (I5 S18)
No changes	'J – Did you do anything differently? S – Probably not…' (I4 S15)
Accessing information	'…I was getting better on the computer and finding the sites I wanted…' (I4 S3)

Information management	'…I can skim read the articles probably a bit better.' (I4 S3) '…it was much more based on evidence…' (I4 S7) '…really read up on the subject a bit more.' (I4 S11)
Execution	
Verbal presentation issues	
Prompt material	'I was writing the presentation on big bits of paper and I changed to cue cards.' (I5 S15)
Presentation style	'…talk to your audience rather than read off a sheet of paper…' (I3 S10) 'I was reading off the screen…it's just sheer nerves…' (I5 S8) '…I think that I'm reading and that doesn't always sound as though I know exactly what \I'm talking about.' (I5 S11)
Read presentation	'…I knew the whole talk, but I still had to read off the cards…or I lose where I am…' (I3 S2) '…I know I read off the sheet….I don't feel I'll ever change.' (I4 S2) 'I tried not to read my notes so much, but I don't retain information enough to just have crib cards.' (I4 S5) '…I can't go up there and ad lib, I never will be able to in front of people…' (I5 S10)
Speed of delivery	'I know I delivered it too fast.' (I3 15) 'I talk too fast.' (I5 S2)
Clarity of delivery	'…feedback from before…to raise my voice and speak more clearly…' (I4 S1) '…before, I just read off the PowerPoint….I actually looked up and looked around the room…' (I4 S17) '…think about my talking….speak more clearer.' (I5 S1)
Interaction with audience	
Acting	…'I decided to dress differently to what people would expect to see the reaction because that was the theme of it (the presentation)…it made me feel so uncomfortable that I completely lost the plot.' (I3 S8)
Discussion generation	'…I didn't feel happy with the discussion that I sort of generated, so I'd go about that a different way.' (I3 S14)

Prior experience	
Confident	'…from watching different styles you see how different things work and then you can use them for your presentation.' (I4 S14) 'I didn't feel so nervous dong the second one as doing the first one…' (I4 S1) '…the more you do the more confident you get.' (I5 S3)
Competent	'I'm used to presenting things, that side of things didn't bother me.' (I3 S13) 'I like giving seminars, I love that sort of thing.' (I3 S14) 'I learned confidence that I am actually able to stand up and speak…' (I3 S4)
General	
Challenging	'It was quite scary. I think you're under pressure because you're presenting to people you know…' (I3 S5) 'I was very, very nervous…and was shaking like mad, the voice was shaking so much.' (I3 S17)

Unseen examinations	
Preparation	
Prior experience	
No changes	'Not really because I like doing exams…I think I've got quite good technique…' (I3 S16)
Useful	'I think I was more prepared for the second one, I knew what to expect…I had a rough idea about the questions.' (I3 S4)
Others	
Time management	'…I don't sort of leave everything to the last minute now." (I3 S13)
Knowledge	'…getting feedback on my cardiorespiratory I realised my problem…it was my knowledge.' (I3 S15
Revision notes	'…simplify revision notes…' (I3 S11) '…using those postcard things for revision notes…I found those very useful.' (I3 S6)

Existing questions	'I practised the doing the (past) papers for both exams." (I3 S17) 'I looked at some of the tutorial questions.' (I3 S14) '...practising under time constraints...' (I3 S11) 'I did quite a few mock questions and then got people to look over them.' (I3 S8)
Tutor assistance	'The tutors helped me a lot.' (I3 S7) 'I had one-to-one sessions with X here to go over tutorials, past exam papers.' (I3 S17)
Execution	
Focus	'...answering the question as opposed to answering what I thought the question was...' (I3 S9)
Answer plans	'I did a plan...in the exams and it paid off' (I3 S17)
Time management	'I made the same mistake that I always make, which is that I run out of time.' (I3 S5)

Poster presentations	
Prior experience	'The whole experience from doing a poster helped.' (I5 S3) '...it was useful to have done one before...' (I5 S12)
Content selection	'...when we were looking there didn't appear to be much research...' (I3 S14) '...what you included...you had to read the marking criteria to actually get the best you can out of it.' (I5 S15)
Presentation style	'...you have to try and put the information across in like basic, simple form.' (I3 S1 'I tried to make my next poster a bit different...' (I5 S5) '...structure of the pictures on the poster itself...try to make it flow.' (I5 S7) '...the layout, the size, colour....' (I5 S8)
Time management	'I did myself sort of deadlines to finish this and to finish that...' (I5 S11)
Time consuming	'Try and give ourselves a bit more time.' (I3 S5)
Learning opportunity	'...if we hadn't done it (the poster) then I wouldn't have learned about it.' (I3 S2) '...it was very interesting...' (I3 S7) '...I think it was a good way of making you learn...' (I3 S10)

Cost efficiency	'The time I spent preparing the poster…hours I spent on the poster, I could be doing something more useful.' (I5 S4)

Essays	
Preparation	
Prior experience	
Useful	'…you have got the background of doing essays…' (I3 S16) '..obviously you sort of know the format…' (I3 S14)
Not useful	'J - So you don't feel that practise is improving things? S – No really…' (I3 S15)
No changes	'J – So you're not really doing anything differently now when you write an essay from, say, last year? S – No.' (I3 S4) 'I've gone about it in the same way really…' (I3 S1)
Others	
Literature searching skills	'…researching the material, you know where to look more…' (I3 S9) '…what I tended to first do was just get every article that had something to do with it. I'm slowly learning not to do that…' (I3 S10)
Evaluation skills	'..rather than just looking… much more looking into them…comparing and seeing what each other's got to say…' (I3 S8) 'Now what I enjoy very much is talking about the authors and the articles.' (I3 S7)
Tutor assistance	'…I'm not very good at essays. I actually went and saw X and spent quite a bit of time doing almost grammatical stuff and I found that really, really helpful.' (I3 S3)
Execution	
Planning	
Essay plans	'…I do try and do a plan and sort of the structure prior to it, if I can, now…' (I3 S12) 'I read the articles first and then I did the plan.' (I3 S7)
Writing processes	
Practice	'I feel I'm definitely getting better with writing.' (I3 S3)
Writing procedure	'I used to write the whole essay down on paper first and then type it out. Actually getting better as I will actually start doing it straight on the computer.' (I3 S10)

Editing	'J – So you're actually editing and monitoring as you go? S – Yes.' (I3 S10)
Referencing skills	'References. I know how to do my references." (I3 S3) '…referencing's probably better…' (I3 S9)

Practical examinations	
Prior experience	
Useful	'…you've obviously got a bit more of an idea…what the sort of format is.' (I 4 S11) '… a lot calmer on the second one…' (I4 S2)
No changes	'I did the same thing, had cue cards…' (I4 S17) 'J – So there were no major problems that arose from that that you felt you needed to change? S – No, no…' (I4 S12)
Others	
Practised	'…tried to get as much practise as we could on each other…' (I4 S14) 'I practised a lot more…I got people at work, people at home as patients…' (I4 S16)
Theory revision	'I really did a lot more revision…did more flashcards…' (I4 S8) '…we also had to really reason why we were doing it (technique).' (I4 S14)

Open book examination	
Preparation	
General	
More preparation	'… a bit wider reading…I'd just found journal articles that were available to me, I hadn't searched much deeper…' (I4 S1) '...I may sort of prepare perhaps a bit more in advance…' (I4 S14) '…get a picture and understanding what you actually have to do.' (I4 S7) 'I tried to really prepare better for the PHCP one.' (I5 S1)
No changes	'I think I'll probably do exactly the same next time…' (I4 S10) 'I did it the same way, it worked for me the first time.' (I5 S5)

Reading	
Literature	'I'll try and read a lot more, I think.' (I4 S1) '...I'd do more with my articles than I had done.' (I4 S2) '...I had a lot more articles...' (I5 S14)
Question prediction	'I won't do a hit and miss. I guess that one paid off, but this one might not so I won't do that same sort of thing...' (I4 S3) '..try not to predict the question quite so fully.' (I4 S5)
Organisation of material	
Volume	'...not to have too many articles...' (I4 S7) 'I still took too much stuff in with me for that exam...I would still try to cut down even more.' (I4 S8)
Organisation	'collating the information well beforehand so that it's easy to pick up...' (I4 S8) '...I tried to organise a little bit better for this one.' (I5 S12) 'I've never really felt that I've got that (the information) grouped sufficiently well...' (I5 S8)
Others	
Practice	'I'd like to do more practise runs...' (I4 S13)
Discussion	'...I didn't have discussions with other students, so I think when we do it again I'll spend a bit more time with them.' (I4 S17) '...everybody had the same subject so I got together with X...and we pooled our resources together...' (I5 S16)
Learning facilitation	'It does make you learn the topic...because you have to have that knowledge to go in there, otherwise you couldn't sit down and write an essay...' (I4 S10)
Topic knowledge	'...with the NS2 one you needed to know your basic background....for PHCP every aspect of it was a equal as it's other...' (I5 S2)

Group work	
Organisation	'It's important to get organised as a group." (I3 S1) 'It was difficult getting everyone together to do it.' (I3 S2) '...getting organised as a group was difficult...because of time and stuff.' (I4 S1) 'The group experience was good...we knew exactly what we were doing so it was well organised.' (I4 S8)
Group dynamics	'...I knew them and I felt comfortable with them.' (I3 S9) '...people's standards aren't the same...something that might seem relatively important to myself may not have done to other members of the group.' (I3 S12) '...there were certain people in our group that weren't putting in as much work as others...' (I3 S15) 'The group, the second time, was much more relaxed. The first time around it was a bit uncertain and people were getting nervous and that caused a bit of friction in the group.' (I4 S7) '..what we did say was that we were all going to take responsibility for doing a joint piece of work.' (I4 S16)
Teamwork	'...shows you how to work and not to work as part of a team.' (I3 S13) '...I learned...you need to rely on and trust your colleagues...' (I3 S16)
Responsibility	'...you've got two other people who are in your group, it's not just your own mark, you've got this 'I've got two other people'...' (I4 S17) '...you knew that the marking would be given to all of you and not just the person that had done the most work...might as well just do it together...' (I3 S13) '...I don't like being responsible for other people's marks and I don't like them being responsible for mine.' (I4 S5)

Compromise	'…I'm not one for working in groups…I like things done a very particular way…' (I3 S5) '…when it's everyone else you have to take on board everyone else's ideas…' (I4 S3) '…I choose a particular way to do something, someone else chooses to do it a different way…it's really hard within a group.' (I4 S5)
Group input	'It was nice to work as a team…all working together…pulling out bits of information and 'Oh this is what I found'…' (I3 S8) '…helpful to have support from the team…' (I4 S1) 'it's always nice to get other people's feedback.' (I4 10) '…it's good because you can work with others and you can bounce ideas off prior to doing your actual presentation…' (I4 S12)

Table 8.3c Learning from assessment experiences – participant numbers

Categories of description	Interview 3 (17)	Interview 4 (15)	Interview 5 (13)
Verbal presentations			
Preparation			
Content			
Topic selection	1 – 14	1-16	
Topic knowledge	7 – 1 3 4 11 12 15 16		
Focussed information	7 – 2 5 6 8 9 12 13	4 – 5 10 12 15	
Interesting information	2 – 7 9		
Visual aids			
Volume	1 – 10		1 – 1
Format	5 – 2 3 8 14 15	3 – 8 13 14	6 – 1 2 5 8 11 17
Design			1 – 5
Preparation			
Organisation	2 – 12 13		
Practice	5 – 1 11 15 16 17	2 – 1 16	
Tutor feedback			1 -7
Time management			3 – 3 12 16
Time consuming	1 – 15		
Prior experience			
Useful		3 – 3 11 16	2 – 16 17
No changes		1 – 15	
Accessing information		1 – 3	
Information management		3 – 3 7 11	

Execution			
Verbal presentation issues			
Prompt material			1 - 15
Presentation style	1 – 10		3 – 8 11 16
Read presentation	1 – 2	2 – 2 5	2 – 2 10
Speed of delivery	1 - 15	1 - 2	1 – 2
Clarity of delivery		5 – 1 2 4 10 17	1 – 1
Interaction with audience			
Acting	1 – 8		
Discussion generation	1 – 14		
Prior experience			
Confident		4 – 1 10 14 17	1 – 3
Competent	3 – 4 13 14		
General			
Challenging	6 – 5 7 8 10 15 17		

Unseen examinations			
Preparation			
Prior experience			
No changes	1 – 16		
Useful	1 – 4		
Others			
Time management	4 – 1 9 12 13		
Knowledge	1 – 15		
Revision notes	5 – 3 6 10 11 17		
Existing questions	7 – 3 8 11 12 13 14 17		
Tutor assistance	2 – 7 17		

Execution			
Focus	1 – 8		
Answer plans	1 – 17		
Time management	1 - 5		

Poster presentations			
Prior experience			2 – 3 12
Content selection	2 – 1 14		1 - 15
Presentation style	2 – 1 17		8 – 1 2 5 7 8 10 15 17
Time management			1 - 11
Time consuming	1 – 5		
Learning opportunity	13 – 2 3 4 6 7 8 9 10 11 12 13 15 16		
Cost efficiency	1 – 4		

Essays			
Preparation			
Prior experience			
Useful	2 – 14 16		
Not useful	1 - 15		
No changes	2 – 1 4		
Others			
Literature searching skills	5 – 2 3 9 10 11		
Evaluation skills	2 – 7 8		
Tutor assistance	1 – 13		
Execution			
Planning			
Essay plans	4 – 3 7 11 12		

Writing processes			
Practice	1 – 3		
Writing procedure	1 – 10		
Editing	1 - 10		
Referencing skills	2 – 3 9		

Practical examinations			
Prior experience			
Useful		7 – 1 2 4 7 11 14 17	
No changes		4 – 1 5 12 17	
Others			
Practice		9 – 1 5 10 11 13 14 15 16 17	
Theory revision		2 – 8 14	

Open book examination			
Preparation			
General			
More preparation		7 - 1 2 4 7 14 15 16	1 – 1
No change		3 – 10 11 16	6 – 3 5 7 10 11 17
Reading			
Literature		3 – 1 2 5	1 – 14
Question prediction		2 – 3 5	
Organisation of material			
Volume		2 – 7 8	
Organisation		2 – 8 12	2 – 8 12

Others			
Practice		1 – 13	
Discussion		1 – 17	1 – 16
Learning facilitation		1 - 10	
Topic knowledge			1 - 2

Group work			
Organisation	5 – 1 2 9 14 16	10 - 1 2 4 8 11 12 13 14 15 16	
Group dynamics	12 – 1 5 6 7 9 10 11 12 13 15 16 17	10 - 3 4 5 7 10 11 12 13 15 16	
Teamwork	2 – 13 16		
Responsibility	2 – 3 13	2 – 5 17	
Compromise	1 – 5	2 – 3 5	
Group input	2 – 8 10	12 -1 2 3 4 8 10 11 12 13 14 15 17	

Table 8.4b Influence of grades – representative quotations

Categories of description	Representative quotations
Passing priority	'They're' not important because as long as I pass it doesn't matter.' (S2) 'I'm just aiming for a pass.' (S6)
Grades a factor	'…when you get a good grade it is important to you.' (S3) 'I like getting grades. I think you work harder.' (S6) '…it helps with your motivation…because you get your grades through and you look at what you've got and you try to keep to that standard…' (S11)
Work strategically	'I suppose it makes you do good detail in your work, like with referencing because you can lose marks quite easily with that…' S1) 'I will always answer an essay according to what I know the marker is wanting to see…' (S5)
Best work priority	'I don't think of grades, no, I just try to get the essay done at the best of my abilities…' (S4) 'I normally just write it so it's done and I think 'Right that's done, how can I make it better?'.' (S16)
Feedback on performance	'…it gives me feedback, how I did…' (S4) 'A pass or fail doesn't tell you anything really…there's not enough feedback.' (S6) '…if you've put a lot of effort in, you want to know how well you've done.' (S9)
Add pressure	'…in a way it's made it very difficult for me because I've done well. I now place myself under ridiculous pressure to want to continue with that…' (S5)

Table 8.4c Influence of grades

Categories of description	Interview 3 (17)
Passing priority	8 – 2 3 6 7 9 10 13 14
Grades a factor	8 – 3 4 6 8 11 15 16 17
Work strategically	2 – 1 5
Best work priority	8 – 4 6 8 11 12 15 16 17
Feedback on performance	11 – 2 4 6 7 8 9 11 12 13 14 15
Add pressure	1 - 5

Table 8.5b Influence of feedback – representative quotations

Categories of description	Representative quotations
Feedback on draft work	'…I prefer feedback I get before handing it in…' (S7)
Formal feedback read	'I just read through…but I don't think there's any specific things…that I would carry on to the next essay really.' (S1) 'I read it, but it's like, if something's is done it's done…' (S7)
Formal feedback read and followed	'I do read it…I pick up on what I'm not doing right and than make sure I do that for the next time.' (S15) '…I try and use it as constructive criticism…' (S8)
Tutor clarification	'If I haven't understood it (feedback) I will often go back and say 'I don't understand your comment here. What did that mean?'…' (S17)

Table 8.5c Influence of feedback – participant numbers

Categories of description	Interview 3 (17)
Feedback on draft work	1 – 7
Formal feedback read	3 – 1 2 7
Formal feedback read and followed	15 – 2 3 4 5 6 8 9 10 11 12 13 14 15 16 17
Tutor clarification	1 - 17